

SoundEarth Strategies, Inc. 2811 Fairview Avenue East, Suite 2000 Seattle, Washington 98102

February 15, 2016

Mr. Mark Chandler TOC Holdings Co. 2737 West Commodore Way Seattle, Washington 98199

SUBJECT: VAPOR INSTRUSION ASSESSMENT Bulk Terminal Property 2737 West Commodore Way Seattle, Washington Project Number: 0440-004

Dear Mr. Chandler:

SoundEarth Strategies, Inc. (SoundEarth) has prepared this letter report to provide the results of the soil gas sampling event conducted at the Bulk Terminal Property located at 2737 West Commodore Way in Seattle, Washington (Figure 1).

The Bulk Terminal Property is part of the Seattle Terminal Properties. The Seattle Terminal Properties include four real properties (King County Tax Parcel Numbers 112503-9050 [Bulk Terminal Property], 112503-9120 [East Waterfront Property], 423790-0405 [ASKO Hydraulic Property], and 112503-9081 [West Waterfront Property]), and one parcel leased from the Washington State Department of Natural Resources (DNR; King County Tax Parcel Number 112503-9113). The Seattle Terminal Properties are identified as the Bulk Terminal Property, East Waterfront Property, ASKO Hydraulic Property, West Waterfront Property, and the DNR Aquatic Lease Land Property.

The vapor intrusion assessment was conducted in general accordance with SoundEarth's proposal, dated January 20, 2015; SoundEarth's Work Plan, dated April 9, 2015; and the Washington State Department of Ecology (Ecology) draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 and updated in April 2015.

This letter report includes a brief summary of background information for the Bulk Terminal Property, a description of the vapor intrusion assessment field activities, a summary of the air sample analytical results, and conclusions.

PURPOSE

The purpose of the vapor intrusion assessment was to evaluate the potential soil vapor migration pathway and to determine if the potential soil vapor pathway for the TOC Holdings Co. Headquarters Office Building (TOC Headquarters Office Building) at the Bulk Terminal Property is complete.

BACKGROUND

TOC Holdings Co. operated a petroleum bulk storage facility at the Bulk Terminal Property between 1941 and October 2001. Former features used at the Bulk Terminal Property as part of the petroleum bulk storage facility included aboveground storage tank (AST) yards, which included 14 former ASTs and associated piping located on the central and east portions of the parcel; a barreling shed located on the west portion of the parcel immediately east of the ASKO Hydraulic Property; a barreling shed located on the southwest portion of the parcel extending onto the ASKO Hydraulic Property; two overhead loading racks on the north portion on the parcel; the southern ends of two barrel inclines; and an underground pipeline utilidor, which extended north beneath the West Commodore Way right-of-way (ROW) to the East Waterfront Property. The 14 former ASTs and associated infrastructure were removed in 2006, and the property is currently occupied with an office building, marine retail, and warehouse space.

Previous subsurface investigations, interim remedial actions, and groundwater monitoring conducted at the Bulk Terminal Property and within the West Commodore Way ROW indicated that total petroleum hydrocarbons (TPH) and pentachlorophenol (PCP) were detected in soil and groundwater, and polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (dioxins) were detected in soil, at concentrations exceeding Washington State Model Toxics Control Act (MTCA) cleanup levels as established in Chapter 340 of Title 173 of the Washington Administrative Code. Interim remedial actions were completed in 2010 through 2012 at the Bulk Terminal Property to mitigate the exposure pathways associated with PCP- and dioxins-contaminated soil and groundwater. A detailed summary of remedial investigations and interim remedial actions performed at the Bulk Terminal Property are described in the Remedial Investigation Report, dated June 13, 2014.

There are two occupied buildings present on the Bulk Terminal Property: the TOC Headquarters Office Building and the Marine Service & Supply office and store. The TOC Headquarters Office Building is currently occupied as commercial office space with a lunch room on the ground floor and offices on the second floor. The Marine Service Supply warehouse is used as storage space for the store and is not continuously occupied. The Marine Service Supply warehouse is located on a loading dock that is elevated approximately 5 feet above the surrounding grade.

A Tier I preliminary vapor intrusion assessment was conducted by comparing existing groundwater conditions to the groundwater screening levels protective of indoor air. Concentrations of TPH in groundwater samples collected from monitoring wells in proximity to buildings located at the Seattle Terminal Properties indicate vapor intrusion may be a potential exposure pathway in the TOC Headquarters Office Building. Based on the preliminary Tier I vapor intrusion assessment, there is a potential for vapor intrusion based on the presence of light nonaqueous-phase liquid as TPH and concentrations of benzene and gasoline-range petroleum hydrocarbons detected in groundwater.

VAPOR INTRUSION ASSESSMENT

Field activities for the vapor intrusion assessment were conducted on March 26, 27, 30, and 31, 2015. Cascade Drilling, L.P. of Woodinville, Washington, performed the drilling and permanent soil gas point installation activities using a direct-push probe rig. Drilling and soil gas point installation activities were observed by a SoundEarth geologist. The scope of work associated with the vapor intrusion assessment included the following:

- Performing a utility locate at the proposed soil gas point locations using Applied Professional Services of North Bend, Washington, and contacting the Northwest Utility Notification Center.
- Preparing a health and safety plan in accordance with MTCA and Part 1910.120 of Title 29 of the Code of Federal Regulations before initiating field activities.
- Preparing a work plan outlining specific field activities to be completed.
- Advancing four direct-push borings (B364 through B366 and B369) and installing permanent soil gas points in borings B365, B366, and B369.
- Collecting soil gas samples from soil gas points B365 and B366 and submitting the soil gas samples for laboratory analysis.
- Surveying the elevation of the top of casing to an established benchmark for soil gas points B365, B366, and B369 using Axis Survey and Mapping Consulting Engineers of Kirkland, Washington.

Soil gas points B367, B368, and B370 were installed under a separate scope of work for the ASKO Hydraulic Property. A detailed description of the vapor intrusion assessment field activities including soil gas point installation and sample collection is provided below.

Soil Gas Point Installation

Direct-push borings B364 through B366 and B369 were continually sampled from the ground surface to the maximum depth explored of 5.5 to 6 feet below ground surface (bgs), using a 4-foot probe rod driven with a 140-pound-per-square-inch hydraulic hammer powered by pressurized hydraulic fluid. The sampler was lined with disposable polyvinyl chloride sleeves that were removed and opened to reveal the sample after each sample interval driven. The locations of the direct-push borings are shown on Figure 2.

The soil samples were described in accordance with SoundEarth's *Standard Operating Procedure 005 – Soil Sampling.* Soil samples were screened in the field for potential evidence of contamination by using visual observations and notations of odor and by conducting headspace analysis using a photoionization detector (PID) to detect the presence of volatile organic vapors. Headspace analysis was conducted by placing soil from each sample interval into a resealable plastic bag and allowing the sample to warm for a minimum of 30 seconds. The probe of the PID was then inserted into the bag, and the highest reading obtained over an approximately 30-second interval was recorded. The Unified Soil Classification System symbol, visual and olfactory notations for the samples, and PID readings are presented on boring log forms, which are provided in Attachment A.

Soil samples were placed directly into laboratory-prepared sample containers. The containers were placed in an iced cooler and transported for potential laboratory analysis to Friedman & Bruya, Inc. of Seattle, Washington.

Borings B365, B366, and B369 were converted to soil gas points Soil Gas 01, Soil Gas 02, and Soil Gas 03 (Figure 3). The soil gas points Soil Gas 01 and Soil Gas 02 were installed above the dissolved-phase benzene plume based on historical groundwater sample analytical results. Soil gas point Soil Gas 03 was

installed as a background sample point and located downgradient of the dissolved-phase benzene plume.

SoundEarth's proposal stated that soil gas samples would be collected at least 5 feet bgs when depth to groundwater was deeper than 8 feet bgs and above the capillary zone. However, due to shallow water encountered, the soil gas screens were placed as follows: Soil Gas 01 was placed 2 to 2.5 feet bgs, Soil Gas 02 was placed 3 to 3.5 feet bgs, and Soil Gas 03 was placed 3 to 3.5 bgs. The borings were advanced at the following depths and locations (Figure 2):

- Boring B364 was advanced to 5.5 feet bgs and located approximately 45 feet south of the northeast corner of the TOC Headquarters Office Building. A sufficient seal to collect soil gas samples was unable to be achieved in this location. The boring was backfilled with bentonite chips to surface grade.
- Boring B365 was advanced to 5.5 feet bgs and located approximately 12 feet northeast of the northwest corner of the TOC Headquarters Office Building.
- Boring B366 was advanced to 5.5 feet bgs and located approximately 15 feet east of the northeast corner of the TOC Headquarters Office Building.
- Boring B369 was advanced to 6 feet bgs and located approximately 10 feet north of the east end of the Marine Service Supply warehouse.

The soil gas points were constructed of 1-inch-diameter stainless steel casing, flush-threaded to 0.5 feet of stainless steel mesh. The bottom and top of each of the soil gas points were fitted with a threaded stainless steel bottom cap and a locking compression-fit well cap. Teflon tubing extended from the compression fitting and was terminated with a stainless steel ball valve. The annulus of the soil gas points was filled with #2/12 silica sand to approximately 1 foot above the top of the screened interval. A bentonite seal of 0.5 feet was installed above the sand pack. The soil gas points were completed at the surface with a flush-mounted, traffic-rated well box set in concrete.

Generated soil cuttings were placed into appropriately labeled, 55-gallon steel drums and transported to the designated staging area at the Bulk Terminal Property, pending proper disposal to a permitted treatment, storage, and disposal facility.

Soil Gas Sample Collection

SoundEarth collected a soil gas sample from soil gas points Soil Gas 01 and Soil Gas 02 on March 30 and 31, 2015, respectively. Soil gas sample collection was attempted at soil gas point Soil Gas 03; however, during sample collection water was observed in the sample train. Therefore, no sample was collected from Soil Gas 03.

Six-liter SUMMA canisters, individually certified, provided by Eurofins Air Toxics, Inc. (Eurofins) laboratory of Folsom, California, were used for soil gas sample collection. Each soil gas point was completed with Teflon tubing that terminated at a ball valve. A soil gas manifold that consisted of the pre-set flow regulator, set at approximately 170 milliliters per minute, and SUMMA canister was connected to the soil gas sampling point by Teflon tubing at the ball valve. The sample train was pressurized prior to beginning sample collection to ensure vacuum was maintained and no connection

fittings were leaking. Three purge volumes were removed from the sample train using a vacuum pump and Tedlar bag to document purge volumes. Soil gas sampling conducted outdoors is prone to the inadvertent collection of air, entering the borehole or sample train during the sampling period. As part of the soil gas sampling, SoundEarth placed an acrylic shroud over the sample train. Helium gas was then introduced into the sample train as a leak detection tracer compound and to create a positive pressure within the sample shroud to limit any collection of ambient air. Samples Soil Gas 01 and Soil Gas 02 were each collected over a 45-minute period. Initial and final vacuum readings for each canister were recorded on the chain-of-custody form. Photographs of the soil gas sampling process are included in Attachment B.

Soil gas samples collected from the soil gas points Soil Gas 01 and Soil Gas 02 were submitted to Eurofins, under standard chain-of-custody protocols, for laboratory analysis. Soil gas samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Modified U.S. Environmental Protection Agency Method TO-15 GC/MS Full Scan and for helium by Modified American Society for Testing and Materials Method D-1946.

RESULTS

Analytical results for the soil gas samples collected from soil gas points Soil Gas 01 and Soil Gas 02 indicated concentrations of BTEX were below the MTCA Method B soil gas screening levels and laboratory reporting limits in both samples (Figure 3; Table 1). In addition, helium concentrations were not detected above the laboratory reporting limits, indicating no leaks were present in the sample train. Copies of the laboratory analytical reports are included as Attachment C.

CONCLUSIONS

The tiered assessment approach recommended by Ecology's draft guidance was followed for the vapor intrusion assessment for the TOC Headquarters Office Building. Based on the results of the preliminary Tier I vapor intrusion assessment, soil gas sampling was performed at soil gas points located directly above the dissolved-phase benzene plume and next to the TOC Headquarters Office to assess whether a potential soil vapor migration pathway is complete. The results of the vapor intrusion assessment for the TOC Headquarters Building indicate that the concentrations of BTEX in soil vapors are protective of indoor air and the soil vapor to indoor air pathway is incomplete for the dissolved-phase benzene plume located at the Bulk Terminal Property. No additional air sampling is necessary at this time.

Respectfully,

SoundEarth Strategies, Inc.

Jessica Brown, LG Project Hydrogeologist

Timothy S. Brown, LHG Senior Hydrogeologist

Attachments: Figure 1, Property Location Map Figure 2, Soil Gas Sample Points Figure 3, Soil Gas Sample Analytical Results for BTEX Table 1, Summary of Soil Gas Analytical Results for BTEX and Helium A, Boring Logs B, Project Photographs C, Laboratory Analytical Reports *Eurofins/Air Toxics Report #1504063A Eurofins/Air Toxics Report #1504063B*

JAB/TSB:dnm/kad

FIGURES









TABLE



Table 1 Summary of Soil Gas Analytical Results for BTEX and Helium TOC Holdings Co. Bulk Terminal Property 2737 West Commodore Way Seattle, Washington

					Analytical Results				
					Benzene ⁽¹⁾	Toluene ⁽¹⁾	Ethylbenzene ⁽¹⁾	Total Xylenes ⁽¹⁾	Helium ⁽²⁾
Sample Name	Sample Location	Sampled By	Sample Type	Sample Date	(µg/m³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(percent)
BTP_SOILGAS_01_20150330	Boring B365	SoundEarth	Soil gas	03/30/15	<1.9	<2.2	<2.6	<5.2	<0.088
BTP_SOILGAS_02_20150331	Boring B366	SoundEarth	Soil gas	03/31/15	<2.8	<3.4	<3.9	<7.8	<0.090
MTCA Method B Soil Gas Scree	ning Levels				10.7 ⁽³⁾	76,200 ⁽⁴⁾	15,200 ⁽⁴⁾	3,040 ⁽⁴⁾	NE
NIOSH TWA ⁽⁵⁾				319	375,000	435,000	NE	NE	
OSHA TWA ⁽⁶⁾					3,190	560,000	435,000	NE	NE

NOTES:

Sample analysis performed by Eurofins Air Toxics, Inc. of Folsom, California.

⁽¹⁾Analyzed by EPA Method Modified TO-15 GC/MS Full Scan.

⁽²⁾Analyzed by Modified ASTM D-1946.

⁽³⁾MTCA Method B Sub-Slab Soil Gas Screening Levels, Cancer, Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, October 2009 and updated in April 2015.

⁽⁴⁾MTCA Method B Sub-Slab Soil Gas Screening Levels, Noncancer, Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, October 2009 and updated in April 2015.

⁽⁵⁾NIOSH 10-hour work day for a 40-hour work week TWA PEL, NIOSH Pocket Guide to Chemical Hazards, September 2007.

⁽⁶⁾OSHA 8-hour work day for a 40-hour work week TWA PEL , NIOSH Pocket Guide to Chemical Hazards, September 2007.

< = not detected at a concentration exceeding the laboratory reporting limit

μg/m³ = micrograms per cubic meter

ASTM = American society for Testing and Materials

BTEX = benzene, toluene, ethylbenzene, and total xylenes

EPA = U.S. Environmental Protection Agency

MTCA = Washington State Model Toxics Control Act

NE = not established

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

PEL = Permissable Exposure Limit

SoundEarth = SoundEarth Strategies, Inc.

TWA = time weighted average

ATTACHMENT A BORING LOGS

So)U	nd Str	Lart	ies Pro Da Su Wa Re Da	oject: oject Number gged by: ite Started: irface Conditi ell Location N ell Location E eviewed by: ite Completec	TOC- 3/26/ 3/26/ 0ns: Grav /S: 47' S /W: 10' E JAB I: 3/26/	BTP -004-37 15 el of NE corr of NE corr (15	ner of TOC HQ Building ner of TOC HQ Building	BORING LOG Site Address: 2737 Seatt Water Depth Time of Drill Water Depth After Compl	B364 West Com le, Washing At ing 3 tetion	modore Way gton feet bgs feet bgs
Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppmv)	Sample ID	USCS Class	Graphic	Lithologic I	Description		Well Detail/ Water Depth
0 -			50	0.6	B364-02	GP SP		Hand-cleared with a post Moist, loose, sandy fine of gray, no hydrocarbon od Moist to wet, medium der SAND with trace silt, inte layers of brown and gray (5-95-0).	hole digger to 1.5 GRAVEL with trac or (5-20-75). nse, fine to mediu rbedded alternatii , no hydrocarbon	i' bgs. e silt, m ng odor	¥
5—				0.7	B364-05.5	ML		Wet, stiff, SILT with some hydrocarbon odor (90-10	e fine sand, light g -0).	ray, no	
- - - - - - - - - - - - - -								Borng terminated at 5.5	μуз.		
Drillin Drillin Samp Hamn Total Total State	ng Co ng Eq ler Ty ner Ty Borir Well Well	D./Drille uipmer ype: ype/We ng Dept Depth:	r: Ci nt: Pi Ci sight: :h: 5.4 	ascade/Frank ushprobe ore Barrel 5	lbs Fil feet bgs Ar	ell/Auger D ell Screene reen Slot S ter Pack U inface Seal nular Seal	iameter: d Interval Size: sed: : : : vne:	2 inches feet bgs inches Bentonite	Notes/Commo Water encounter setting vapor poi move approxima through the asph	ents: ed at 3' bgs ht from 2 to tely 40' Nort alt.	. Instead of 2.5' bgs will th and drill

So)U	nd Str	ateg	ies Pro Da Su We Re Da	oject: oject Number: gged by: te Started: rface Conditio II Location N/ II Location E/ viewed by: te Completed:	TOC- 0440- JSL 3/26/ ons: Conc S: 14' N W: 60' W JAB 3/26/	BTP -004-37 15 rete of NE corr / of NE cor / 15	ner of TOC HQ Building ner of TOC HQ Building	BORING LOG Site Address: 2737 Seattl Water Depth Time of Drill Water Depth After Complete	B365 West Com le, Washing At ang a b tion	modore Way gton feet bgs feet bgs
Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppmv)	Sample ID	USCS Class	Graphic	Lithologic	Description		Well Detail/ Water Depth
0 -			60	0.7	B365-02	Concrete SM ML		0-8" bgs concrete. Hand digger to 1' bgs. Moist, medium dense, s brown, no hydrocarbon 2" of wood fragments at Wet, medium dense, find wood debris, mottled lig hydrocarbon odor (70-30	-cleared with a pos lty fine to medium odor (20-80-0). 2.5' bgs. e sandy SILT, scatt ht and dark brown. 0-0).	st hole SAND, ered , no	
5—				0.6	B365-05.5			Wet, medium dense, find brown, no hydrocarbon	e sandy SILT, gray odor (60-40-0).	to	
- - - - - - - - - - - - -											
Drillin Drillin Samp Hamn Total Total State	ng Co ng Eq ler Ty ner Ty Borir Well Well	./Drille uipmer ype: ype/We ng Dept Depth: ID No.:	r: Ci ht: Pi Ci ight: h: 5.4 2.4 Bi	ascade/Frank ushprobe ore Barrel 5 5 JA 719	lbs Filt feet bgs Ann Mon	II/Auger D II Screene een Slot S er Pack Us face Seal: nular Seal nument Ty	iameter: d Interval: bize: sed: : : ype:	2 inches 2.0 to 2.5 feet bg Mesh inches #2/12 Sand Cement Bentonite Flushmount	S Stainless steel m	ents: esh used fo	or well screen.

Sc)U	nd Str	art	Pro Pro Lo Da Su We Re Da	oject: oject Number: gged by: te Started: rface Conditio ell Location N/ ell Location E/ viewed by: te Completed:	TOC- 0440- JSL 3/26/ ons: Asph S: 2' S c W: 19'E JAB 3/26/	BTP -004-37 15 alt of NE corne of NE corne (15	er of TOC HQ Building er of TOC HQ Building	BORING LOG Site Address: 2737 Seatt Water Depth Time of Drill Water Depth After Compl	B366 West Comr le, Washing 1 At ling 3 1 letion	modore Way pton feet bgs feet bgs
Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppmv)	Sample ID	USCS Class	Graphic	Lithologic I	Description		Well Detail/ Water Depth
0 -				2.2	B366-02	Asphalt SM		0-6" bgs asphalt. Hand-cleared with a post SAND, brown, no hydroc Moist, medium dense, sil brown to light brown, no 60-0). Wet, medium dense, silty	hole digger. Mois arbon odor (20-80 ty fine SAND, dar hydrocarbon odo	:t, silty -0). k r (40- ge, no	
- 5—	\bigwedge		100	585.7	B366-05.5	SM		Wet, medium dense, silty moderate hydrocarbon o sheen.	, fine SAND, gray, dor (30-70-0). Slig	ht	
-								Boring terminated at 5.5	ogs.		
10 — - - -											
15 Drillin Samp Hamn Total Total State	ng Co ng Eq ler Ty ner Ty Borir Well Well	o./Drille uipmer ype: ype/We ng Dept Depth: ID No.:	r: Ca ht: Pu Ca ight: h: 5.9 2.9 B.	ascade/Frank ushprobe ore Barrel 5 5 JA 720	lbs Filt feet bgs Ann More	II/Auger D II Screene een Slot S er Pack Us face Seal: nular Seal nument Ty	iameter: d Interval: Size: sed: : : ype:	2 inches 2.0 to 2.5 feet bgs Mesh inches #2/12 Sand Cement Bentonite Flushmount	 Notes/Comm Moderate hydroc bgs. Stainless steel m Page: 	ents: arbon odor f lesh used fo	from 3 to 5.5' r well screen. Of 1

Sc)U	nd Sti	art ateg	i e s Re Re	oject: oject Number: gged by: te Started: rface Conditic ell Location N/ ell Location E/ viewed by:	TOC 0440 JSL 3/27/ ons: Conc 'S: 70' S W: 18' E JAB	BTP -004-37 15 crete 5 of the SW 6 of the SW	corner of the TOC HQ buildi	BORING LOG	B369 West Com le, Washing At ing 4	modore Way gton feet bgs
Depth (feet bgs)	Interval	Blow Count	% Recovery	Da PID (ppmv)	te Completed Sample ID	USCS Class	Graphic Graphic	Lithologic D		etion	feet bgs Well Detail/ Water Depth
0 -			100	1.0	B369-02 B369-05.5	Concrete		0.75' of concrete. Hand-cleared with a post Moist, medium dense, silt with some fine gravel, gra (30-50-20). Moist, medium dense, silt with some fine gravel, gra of orange, no hydrocarbor Wet, medium dense, silty gray to brown with areas of hydrocarbon odor (25-60-	hole digger to 1. y fine to medium y, no hydrocarbo y fine to medium y to brown with a n odor (25-60-15) fine to medium S of orange color, f 15).	5' bgs. SAND on odor SAND areas	
- - - - - - - - - - - -								Boring terminated at 6' bg	S.		
Drillin Drillin Samp Hamn Total Total State	ng Co g Eq ler Ty ner Ty Borir Well Well	D./Drille uipmer ype: ype/We ng Dept Depth: ID No.:	r: C ht: P C hight: h: 6 3. B	ascade/Frank ushprobe ore Barrel 5 JA 723	lbs Filt feet bgs An Mo	II/Auger D II Screene reen Slot S rer Pack U rface Seal nular Seal nument Ty	viameter: ed Interval: Size: sed: : : ype:	2 inches 3 to 3.5 feet bgs Mesh inches #2/12 Sand Cement Bentonite Flushmount	Notes/Commo Faint hydrocarbo Stainless steel m Page:	ents: n odor from esh used fo	4 to 6' bgs. or well screen. of 1

ATTACHMENT B PROJECT PHOTOGRAPHS



PROJECT PHOTOGRAPHS Bulk Terminal Property 2737 West Commodore Way Seattle, Washington Project No.: Date: Drawn By: Chk By: 0440-004-37 April 21, 2015 JAC JAB



Photograph 1. Installing soil gas sample point B366.



Photograph 3. Setting up soil gas sample Soil Gas_03.



Photograph 2. Soil sample collection.



Photograph 4. Sample train for soil gas sample Soil Gas_01.



Photograph 5. Helium gas introduced to sample train as a leak detection tracer compound.



Photograph 6. Sample train showing collection of helium readings.

ATTACHMENT C LABORATORY ANALYTICAL REPORTS

Eurofins Air Toxics, Inc. #1504063A



4/6/2015 Ms. Suzanne Stumpf SoundEarth Strategies, Inc 2811 Fairview Avenue East Suite 2000 Seattle WA 98102

Project Name: BULK TERMINAL PROPERTY Project #: 01-600 Workorder #: 1504063A

Dear Ms. Suzanne Stumpf

The following report includes the data for the above referenced project for sample(s) received on 4/3/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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,

Willy Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

180 Blue Ravine Road, Suite B Folsom, CA 95630



WORK ORDER #: 1504063A

Work Order Summary

CLIENT:	Ms. Suzanne Stumpf	BILL TO:	Ms. Suzanne Stumpf
	SoundEarth Strategies, Inc		SoundEarth Strategies, Inc
	2811 Fairview Avenue East		2811 Fairview Avenue East
	Suite 2000		Suite 2000
	Seattle, WA 98102		Seattle, WA 98102
PHONE:	206-306-1900	P.O. #	0440-004-37
FAX:	206-306-1907	PROJECT #	01-600 BULK TERMINAL PROPERTY
DATE RECEIVED:	04/03/2015	CONTACT	Kelly Buettner
DATE COMPLETED:	04/06/2015	contact.	Keny Ducturer

			RECEIPT	FINAL
FRACTION #	NAME	TEST	VAC./PRES.	PRESSURE
01A	BTP_SOILGAS_01_2015330	Modified TO-15	7.1 "Hg	5.1 psi
02A	BTP_SOILGAS_02_2015331	Modified TO-15	7.6 "Hg	5 psi
03A	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:

layes

DATE: <u>04/06/15</u>

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015. Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

> This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc. 180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

> > Page 2 of 11

LABORATORY NARRATIVE Modified TO-15 SoundEarth Strategies, Inc Workorder# 1504063A

Two 6 Liter Summa Canister (100% Certified) samples were received on April 03, 2015. 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	<pre><!--=30% RSD with 2 compounds allowed out to < 40% RSD</pre--></pre>	=30% RSD with 4 compounds allowed out to < 40% RSD</td
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

🛟 eurofins

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on samples BTP_SOILGAS_01_2015330 and BTP_SOILGAS_02_2015331 due to the presence of high level non-target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in sample BTP_SOILGAS_01_2015330 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

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



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

Client Sample ID: BTP_SOILGAS_01_2015330

Lab ID#: 1504063A-01A No Detections Were Found.

Client Sample ID: BTP_SOILGAS_02_2015331

Lab ID#: 1504063A-02A No Detections Were Found.



Client Sample ID: BTP_SOILGAS_01_2015330 Lab ID#: 1504063A-01A MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

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File Name: Dil. Factor:	20040313 5.89	Date Date	Date of Collection: 3/30/15 4:21:00 PM Date of Analysis: 4/3/15 06:59 PM			
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
Benzene	0.59	Not Detected	1.9	Not Detected		
Toluene	0.59	Not Detected	2.2	Not Detected		
Ethyl Benzene	0.59	Not Detected	2.6	Not Detected		
m,p-Xylene	0.59	Not Detected	2.6	Not Detected		
o-Xylene	0.59	Not Detected	2.6	Not Detected		

Q = Exceeds Quality Control limits.

Container Type: 6 Liter Summa Canister (100% Certified)

		Method		
Surrogates	%Recovery	Limits		
1,2-Dichloroethane-d4	378 Q	70-130		
Toluene-d8	99	70-130		
4-Bromofluorobenzene	107	70-130		



Client Sample ID: BTP_SOILGAS_02_2015331 Lab ID#: 1504063A-02A MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

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File Name: Dil. Factor:	20040315 8.95	Date of Collection: 3/31/15 11:05:00 AM Date of Analysis: 4/3/15 08:29 PM			
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Benzene	0.90	Not Detected	2.8	Not Detected	
Toluene	0.90	Not Detected	3.4	Not Detected	
Ethyl Benzene	0.90	Not Detected	3.9	Not Detected	
m,p-Xylene	0.90	Not Detected	3.9	Not Detected	
o-Xylene	0.90	Not Detected	3.9	Not Detected	

Container Type: 6 Liter Summa Canister (100% Certified)

		Method		
Surrogates	%Recovery	Limits		
1,2-Dichloroethane-d4	89	70-130		
Toluene-d8	96	70-130		
4-Bromofluorobenzene	97	70-130		



Client Sample ID: Lab Blank Lab ID#: 1504063A-03A MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20040306 1.00	Date Date	5 11:52 AM	
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

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		Method
Surrogates	%Recovery	Limits
1,2-Dichloroethane-d4	83	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	97	70-130



Client Sample ID: CCV Lab ID#: 1504063A-04A MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20040302 1.00	Date of Collection: NA Date of Analysis: 4/3/15 08:43 AM
Compound		%Recovery
Benzene		99
Toluene		102
Ethyl Benzene		108
m,p-Xylene		106
o-Xylene		107

		Method	
Surrogates	%Recovery	Limits	
1,2-Dichloroethane-d4	110	70-130	
Toluene-d8	99	70-130	
4-Bromofluorobenzene	100	70-130	



Client Sample ID: LCS Lab ID#: 1504063A-05A MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

1

File Name: Dil. Factor:	20040303 1.00	Date of Collec Date of Analys	tion: NA sis: 4/3/15 09:28 AM
Compound		%Recovery	Method Limits
Benzene		99	70-130
Toluene		101	70-130
Ethyl Benzene		109	70-130
m,p-Xylene		105	70-130
o-Xylene		108	70-130

		Method
Surrogates	%Recovery	Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130



Client Sample ID: LCSD Lab ID#: 1504063A-05AA MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20040304 1.00	Date of Collec Date of Analys	tion: NA sis: 4/3/15 10:12 AM
Compound		%Recovery	Method Limits
Benzene		98	70-130
Toluene		101	70-130
Ethyl Benzene		106	70-130
m,p-Xylene		105	70-130
o-Xylene		106	70-130

		Method
Surrogates	%Recovery	Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130



Sample Transportation Notice

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Eurofins Air Toxics, Inc. #1504063B



4/6/2015 Ms. Suzanne Stumpf SoundEarth Strategies, Inc 2811 Fairview Avenue East Suite 2000 Seattle WA 98102

Project Name: BULK TERMINAL PROPERTY Project #: 01-600 Workorder #: 1504063B

Dear Ms. Suzanne Stumpf

The following report includes the data for the above referenced project for sample(s) received on 4/3/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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,

Killy Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

180 Blue Ravine Road, Suite B Folsom, CA 95630



WORK ORDER #: 1504063B

Work Order Summary

CLIENT:	Ms. Suzanne Stumpf	BILL TO:	Ms. Suzanne Stumpf
	SoundEarth Strategies, Inc		SoundEarth Strategies, Inc
	2811 Fairview Avenue East		2811 Fairview Avenue East
	Suite 2000		Suite 2000
	Seattle, WA 98102		Seattle, WA 98102
PHONE:	206-306-1900	P.O. #	0440-004-37
FAX:	206-306-1907	PROJECT #	01-600 BULK TERMINAL PROPERTY
DATE RECEIVED:	04/03/2015	CONTACT	Kelly Buettner
DATE COMPLETED:	04/06/2015	connen.	Keny Ductifier

			RECEIPT	FINAL
FRACTION #	NAME	<u>TEST</u>	VAC./PRES.	PRESSURE
01A	BTP_SOILGAS_01_20150330	Modified ASTM D-1946	7.1 "Hg	5.1 psi
02A	BTP_SOILGAS_02_20150331	Modified ASTM D-1946	7.6 "Hg	5 psi
03A	Lab Blank	Modified ASTM D-1946	NA	NA
04A	LCS	Modified ASTM D-1946	NA	NA
04AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

layes

DATE: <u>04/06/15</u>

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015. Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE Modified ASTM D-1946 SoundEarth Strategies, Inc Workorder# 1504063B

Two 6 Liter Summa Canister (100% Certified) samples were received on April 03, 2015. The laboratory performed analysis via Modified ASTM Method D-1946 for Helium in air using GC/TCD. The method involves direct injection of 1.0 mL of sample.

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

There were no receiving discrepancies.

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



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

Client Sample ID: BTP_SOILGAS_01_20150330

Lab ID#: 1504063B-01A No Detections Were Found.

Client Sample ID: BTP_SOILGAS_02_20150331

Lab ID#: 1504063B-02A No Detections Were Found.



Client Sample ID: BTP_SOILGAS_01_20150330 Lab ID#: 1504063B-01A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

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File Name: Dil. Factor:	9040323b 1.77	Date of Coll Date of Ana	ection: 3/30/15 4:21:00 PM lysis: 4/3/15 07:19 PM
		Rpt. Limit	Amount
Compound		(%)	(%)
Helium		0.088	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)



Client Sample ID: BTP_SOILGAS_02_20150331 Lab ID#: 1504063B-02A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

1

File Name: Dil. Factor:	9040324b 1.79	Date of Colle Date of Anal	ection: 3/31/15 11:05:00 AM ysis: 4/3/15 07:43 PM
Compound		Rpt. Limit	Amount
Helium		0.090	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)



Client Sample ID: Lab Blank Lab ID#: 1504063B-03A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	9040304b 1.00	Date of Colle Date of Analy	ction: NA ysis: 4/3/15 10:24 AM
Compound		Rpt. Limit (%)	Amount (%)
Helium		0.050	Not Detected

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Client Sample ID: LCS Lab ID#: 1504063B-04A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	9040302b 1.00	0302b Date of Collection: NA 1.00 Date of Analysis: 4/3/15 09:3					
Compound		%Recovery	Method Limits				
Helium		100	85-115				



Client Sample ID: LCSD Lab ID#: 1504063B-04AA NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	9040308b 1.00	9040308b Date of Collection: 1.00 Date of Analysis: 4				
Compound		%Recovery	Method Limits			
Helium		100	85-115			



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Project Manager JESSICA BZOWN			Project Inf	o:			Turn	Around	Lab Use (Only			
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Address 2811 Failulew Ave. E City SEATTLE State WA Zin 98107			Project # 01-600			A-Rush		Pressurization Gas					
Phone (206)306-1900	2 Fax (206) 3	606 - 1907	-p <u>10</u>	Project Nam	10 BULK TERMINIAL ROPERTY			24 HR.		N. He		
				Date	Time				Canis		er Pressure/Vacuum		
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