

2100.26.065

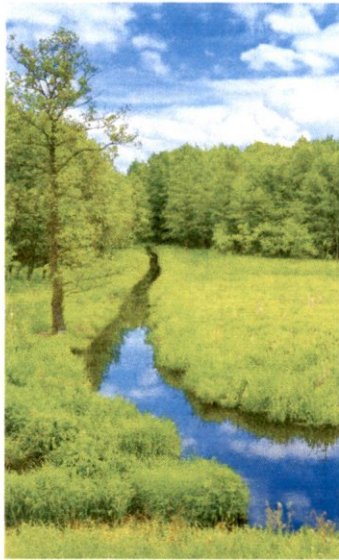
ADEC File No.

Hazard ID No.



**CONESTOGA-ROVERS
& ASSOCIATES**

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Report

WINTER 2014/2015 SOIL VAPOR SAMPLING REPORT

Chevron Site 91356
1465 West Northern Lights Boulevard
Anchorage, Alaska
ADEC File ID: 2100.26.065

Prepared for: Alaska Department of Environmental
Conservation

Conestoga-Rovers & Associates

14998 West 6th Avenue, Suite 800
Golden, Colorado 80401

April 2015 • 622232 • Report No. 25

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Department of
Environmental Conservation





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Chevron Site 91356
1465 West Northern Lights Boulevard
Anchorage, Alaska
ADEC File ID: 2100.26.065

Prepared for:

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Alaska Department of Environmental Conservation

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APRIL 2015
REF. NO. 622232 (25)

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List of Acronyms and Abbreviations

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, and total xylenes
PCE	Tetrachloroethylene
COPCs	contaminants of potential concern
CRA	Conestoga-Rovers & Associates
CSM	conceptual site model
DRO	diesel range organics
fbg	feet below grade
ft	feet
GRO	gasoline range organics
mg/m ³	milligrams per cubic meter
USEPA	United States Environmental Protection Agency
UST	underground storage tank

Section 1.0 Introduction

Conestoga-Rovers & Associates (CRA) is submitting this *Winter 2014/2015 Soil Vapor Sampling Report* to the Alaska Department of Environmental Conservation (ADEC) for Chevron site 91356 in Anchorage, Alaska on behalf of Chevron Environmental Management Company (Chevron). A *Revised Soil Vapor Assessment Workplan* was approved by the ADEC on May 1, 2014. The site background, site conditions, installation details, sampling results, and conclusions are presented below.

Section 2.0 Site Background

2.1 Site Description

The site is an active Chevron-branded service station located at 1465 West Northern Lights Boulevard in Anchorage, Alaska (Figure 1). The property's legal description is Chevron TR 1. The latitude and longitude are 61.195146° north and 149.912277° west. The site is currently owned by the Cook Inlet Marketing Group. Station facilities consist of three underground storage tanks (USTs), four fuel dispenser islands, product piping, and a station building (Figure 2). Site photographs are presented as Appendix A. Site environmental history is presented as Appendix B.

2.2 Site Hydrogeology

The site is located in south central Alaska, southeast of the northern Knik Arm of Cook Inlet. Historical groundwater depths have ranged between approximately 11 and 16 feet below grade (fbg). Groundwater flows to the southwest with a general gradient of 0.001 feet per foot.

2.3 Contaminants of Potential Concern - Cleanup Levels

Site contaminants of potential concern (COPCs) are diesel range organics (DRO), gasoline range organics (GRO), benzene, and tetrachloroethene (PCE). Table C Groundwater Cleanup Levels (*Title 18 Alaska Administrative Code (ACC) 75.345*) and Method Two Soil Cleanup Levels, Tables B1 and B2, under 40-inch zone, migration to groundwater (*Title 18 AAC 75.341*), and ADEC Target Levels for Shallow Soil Gas (*Vapor Intrusion Guidance, Appendix E*) are the established site cleanup levels.

2.4 Conceptual Site Model

CRA prepared a conceptual site model (CSM) in accordance with ADEC's *Policy Guidance on Developing Conceptual Site Models* and *Draft Vapor Intrusion Guidance for Contaminated Sites*. The CSM was submitted to the ADEC in December 2013. Inhalation of indoor air and outdoor air, ingestion of groundwater and soil ingestion were identified as complete exposure pathways.

Section 3.0 Soil Vapor Sampling

3.1 Sampling Rationale

Indoor and outdoor air inhalation pathways are complete due to the detection of PCE in soil above Method Two Soil Cleanup Levels within 100 feet of the station building. CRA submitted an *Initial Vapor Intrusion Evaluation* in December 2013 recommending a soil vapor assessment to further evaluate inhalation pathways. A *Revised Soil Vapor Assessment Workplan* was approved by the ADEC on May 1, 2014. CRA installed three soil vapor probes adjacent to the building (Figure 2) to further evaluate inhalation pathways on May 2, 2014. On July 28, 2014, CRA conducted a summer soil vapor sampling event. A winter soil vapor sampling event was required to assess seasonal fluctuations in soil vapor concentrations.

3.2 Site Safety

CRA coordinated site activities with all associated laboratories, stakeholders, ADEC, and Chevron. CRA conducted a pre-field safety meeting with Chevron and all appropriate parties prior to the start of field work.

CRA prepared a site-specific health and safety plan to inform site workers of known hazards and provide health and safety guidance. A journey management plan was prepared to address safety concerns associated with traffic routes and onsite parking. CRA reviewed Chevron and CRA safety protocols at daily tailgate meetings.

3.3 Soil Vapor Sampling

On February 2, 2015, CRA collected soil vapor samples from SVP-1, SVP-2 and SVP-3 at 5 fbg using 100 percent (%) laboratory certified 6-liter Summa™ canisters.

A “shut-in” test was performed following connection of the sampling equipment to the vapor probe tubing to reduce the potential for ambient air to dilute the soil vapor samples. This test was performed by sealing all openings to ambient air and the vapor probe and establishing a vacuum of approximately 100 inches of water column inside the sampling train. Vacuum was established using a GAST MOA-V11-JH diaphragm vacuum pump. The sample train was then observed for at least one minute to ensure that vacuum remained stable.

Following successful completion of the “shut-in” test, approximately three to five volumes of air were purged from the sample tubing using the GAST diaphragm pump. While purging the sample train, a leak test was conducted using helium as a tracer gas. The vapor probe vault was enclosed under a rigid shroud containing a 20% to 35% helium concentration. A Dielectric MGD 2002 gas detector was used to

verify the helium concentration under the hood as well as screen for helium at the diaphragm pump effluent port to verify that no helium was drawn into the sample train.

Following successful completion of the leak test, soil vapor samples were collected using the pre-set laboratory flow rate until a negative pressure of approximately five inches of mercury was observed on the vacuum gauge of the sample Summa™ canister.

Soil vapor samples were submitted for laboratory analyses under chain-of-custody to Lancaster Laboratories. Soil gas sampling was conducted in accordance with ADEC's October 2012 *Vapor Intrusion Guidance for Contaminated Sites*. CRA field notes are presented as Appendix C. CRA soil vapor sampling data sheets are presented as Appendix D.

3.7 Soil Vapor Analytical Methods

Select soil vapor samples were analyzed for:

- PCE by United States Environmental Protection Agency (USEPA) Method TO-15
- Oxygen, methane, carbon dioxide and helium by ASTM Method D-1946

Soil vapor samples were initially analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and naphthalene by TO-15, not PCE, due to an error on the chain of custody. Concentrations of BTEX and naphthalene were either not detected above method detection limits or were below ADEC Target Levels for Shallow Soil Gas and deemed to have no impact to the project. CRA requested Eurofins Lancaster Laboratories to generate a new analytical report documenting the results for PCE as initially intended. A summary letter describing the analytical report revisions and documentation of the BTEX and naphthalene concentrations are included in the analytical report.

3.8 Soil Vapor Analytical Results

PCE was not detected above ADEC Target Levels for Shallow Gas in samples collected from soil vapor probes SVP-1 and SVP-2. PCE concentrations remained above the ADEC shallow soil gas target level of 1.8 milligrams per cubic meter (mg/m^3) in winter vapor sample SVP-3-020215 at $2.1 \text{ mg}/\text{m}^3$. No helium was detected in any of the soil vapor samples. Soil vapor analytical results are presented in Table 1. Eurofins Lancaster Laboratories' analytical report is presented as Appendix E. ADEC laboratory data review checklist and memorandum are presented as Appendix F. Based on the quality assurance/quality control review, the data submitted was judged to be acceptable for use without qualification.

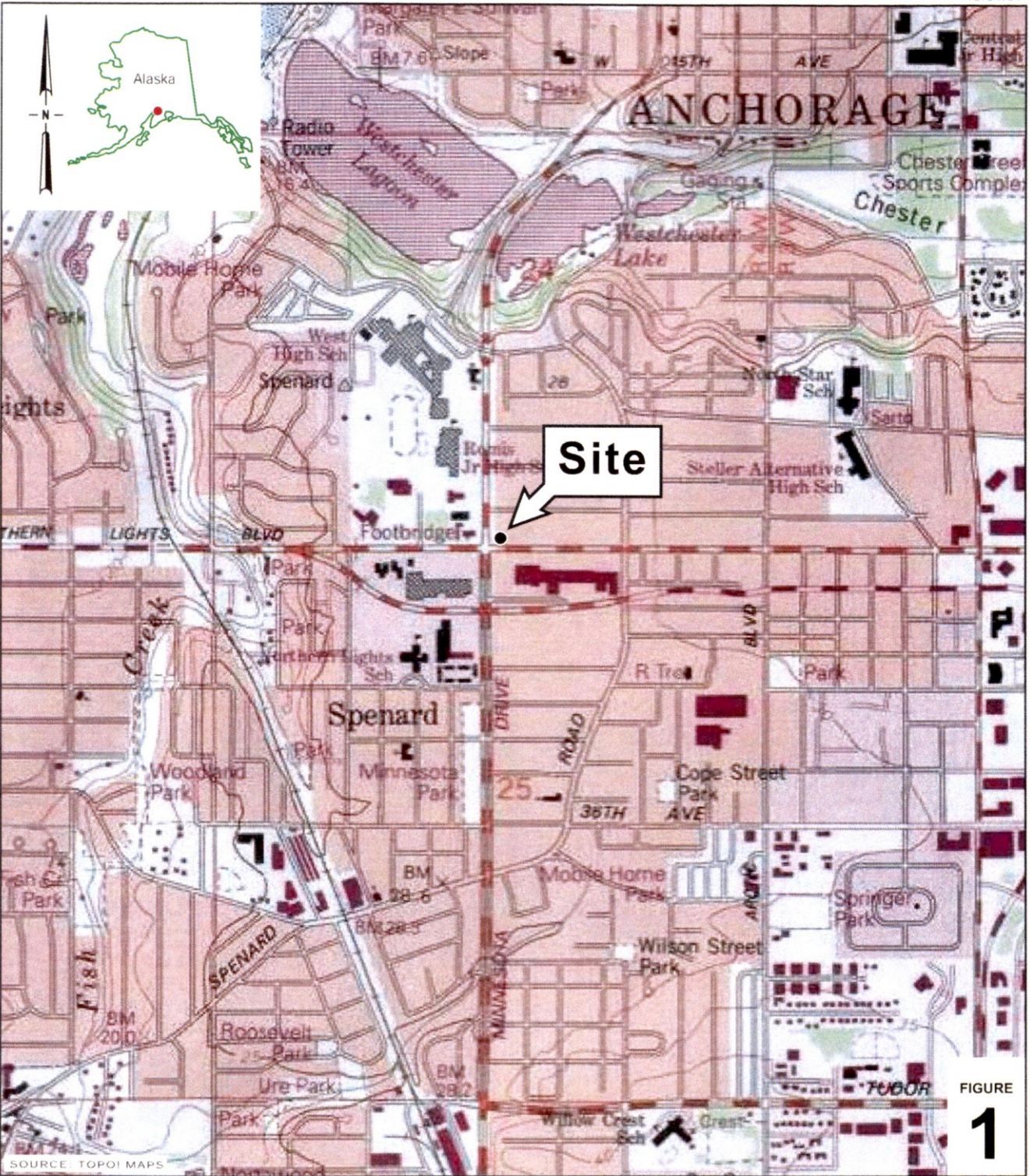
Section 4.0 Conclusions

PCE showed a significant decrease in the 2014/2015 winter soil vapor sampling event from the 2014 summer soil vapor sampling event. Maximum PCE concentrations of 10 mg/m³ detected during the summer vapor sampling event decreased to a maximum detected concentration of 2.1 mg/m³. PCE remained above ADEC Target Levels for Shallow Gas in the soil vapor sample collected from SVP-3 during the winter event.

Figures

Figure 1: Vicinity Map

Figure 2: Soil Vapor Probe Location Map



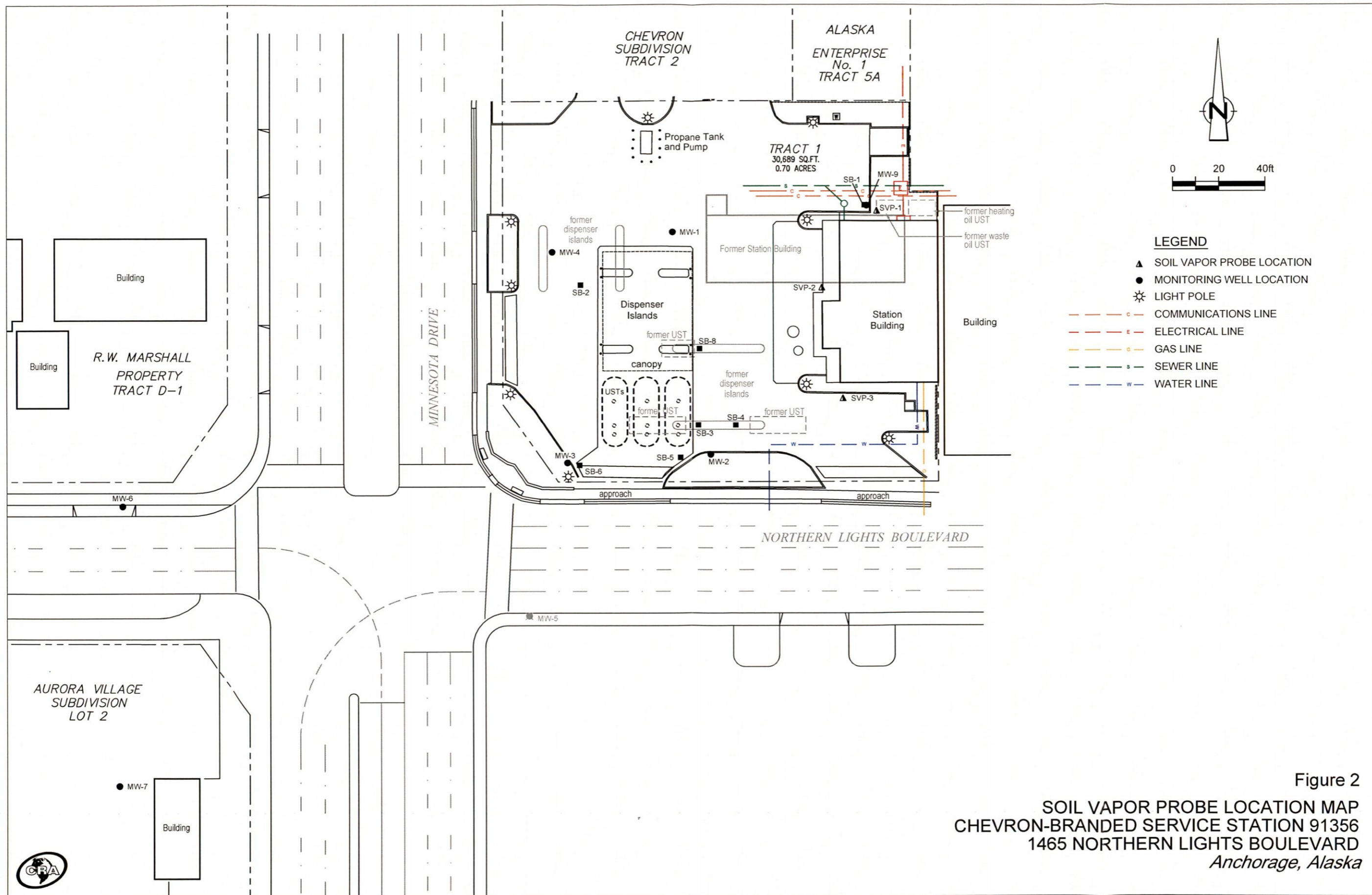
RENDER OFFICE/IAK MT-DIAMOND PROJECTS/IAK DIAMOND PROJECTS/9-1356 ANCHORAGE, AK FIGURE 9-1356 VICINITY MAP.A1

**Chevron-Branded
Service Station 9-1356**
1465 Northern Lights Boulevard
Anchorage, Alaska



**CONESTOGA-ROVERS
& ASSOCIATES**

Vicinity Map



Tables

Table 1: Soil Vapor Analytical Results for PCE

Table 1.**Soil Gas Analytical Results for PCE**

Chevron Station 91356, 1465 Northern Lights Blvd, Anchorage, Alaska

Sample ID	Date Sampled	Sample Depth (fbg)	mg/m ³	
			PCE	Helium
SVP-1-072814	7/28/2014	5	0.51	<10,000
SVP-1-020215	2/2/2015	5	0.66 J	<2,500
DUP-1-020215			0.69 J	<2,500
SVP-2-072814	7/28/2014	5	4.6	<10,000
SVP-2-020215	2/2/2015	5	1.6 J	<2,500
SVP-3-072814	7/28/2014	5	10	<10,000
DUP-1-072814	7/28/2014	5	9.1	<10,000
SVP-3-020215	2/2/2015	5	2.1 J	<2,500
Target Levels for Shallow Soil Gas - Commercial (mg/m³)			1.8	N/A

Abbreviations and Methods:

PCE = Tetrachloroethene by method TO-15

Helium used as a tracer gas to ensure integrity of the sample train

fbg = Feet below grade

mg/m³ = milligrams per cubic meter

J = Estimated

Target Levels for Shallow Soil Gas - Department of Environmental Conservation Appendix E - 2012

Appendix A

Site Photographs



Photo 1 – Site view looking west from the station building entrance



Photo 2 – View of the site looking northwest

SITE PHOTOGRAPHS



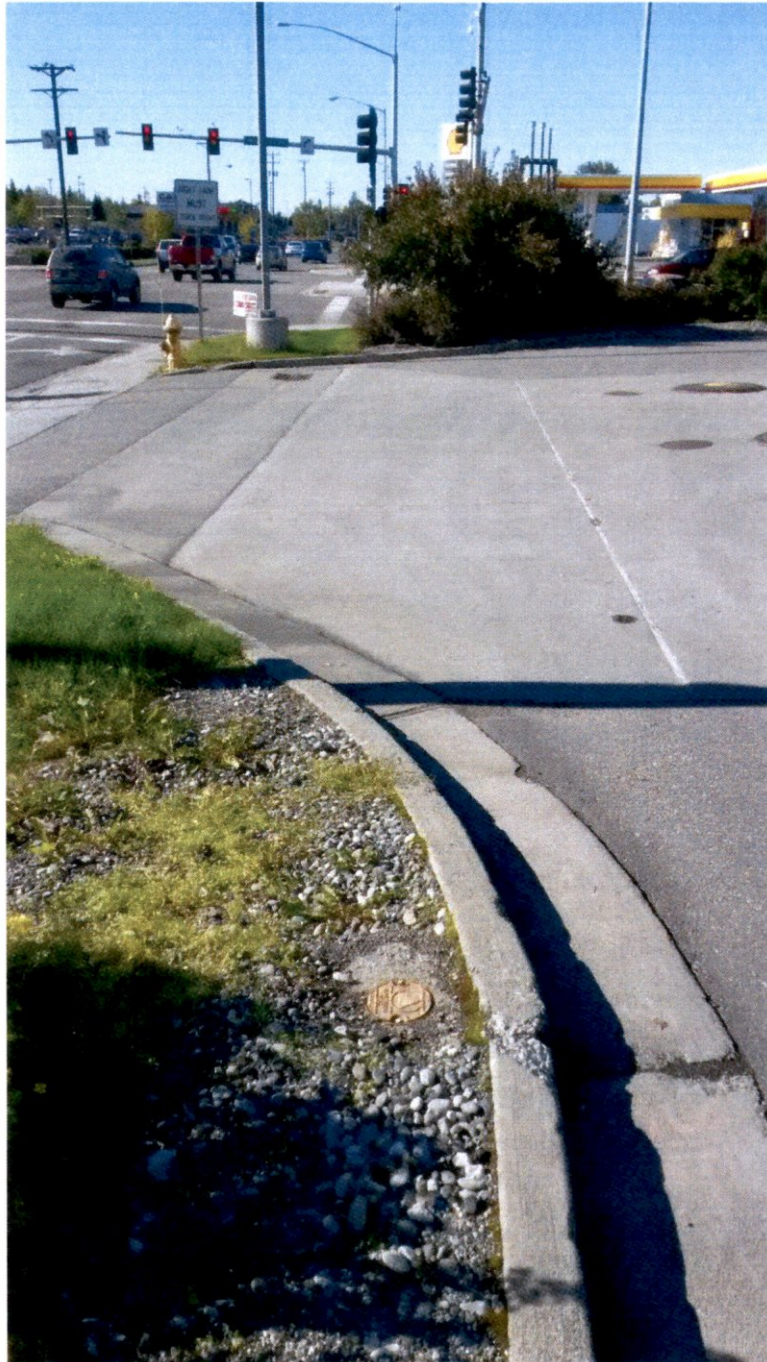


Photo 3 – Looking west at intersection of Northern Lights Blvd and Minnesota Blvd

SITE PHOTOGRAPHS





Photo 4 – View of site looking northeast



Photo 5 – View of site looking south

SITE PHOTOGRAPHS



Appendix B

Environmental History

Environmental History Chevron-Branded Service Station 91356

1998 UST Removal

SECOR International, Incorporated (SECOR) collected soil samples during the removal of one used oil UST, one heating oil UST and three gasoline USTs, dispenser islands and product piping. Details are presented in SECOR's August 6, 1998 *Underground Storage Tank Removal and Site Assessment Report*.

1999 Site Assessment

SECOR installed groundwater wells MW-1 through MW-4. Details are presented in SECOR's September 7, 1999 *Site Assessment Report*.

2001 Site Assessment

SECOR installed groundwater monitoring wells MW-5 and MW-6 to delineate the horizontal extent of petroleum hydrocarbons in groundwater. Details are presented in SECOR's November 20, 2001 *Site Assessment for Offsite Monitoring Well Installation*.

2006 Well Installation

Cambria Environmental Technology (Cambria) installed offsite well MW-7 to assess for potential petroleum hydrocarbon migration downgradient of the site. Details are presented in Cambria's February 9, 2007 *Subsurface Investigation Report*.

2011 Site Assessment

CRA advanced soil borings SB10-1 to SB10-8 to assess natural attenuation of petroleum hydrocarbons in soil. Details are presented in CRA's February 15, 2011 *Subsurface Investigation Report and Cleanup Complete with Institutional Controls Request*.

2012 Well Installation

CRA installed groundwater monitoring well MW-9 west of former soil boring SB10-1 on July 23, 2012 to investigate the extent of PCE in soil and evaluate groundwater quality. Details are presented in CRA's January 17, 2013 *Well Installation Report*.

2014 Soil Vapor Probe Installation

CRA installed three, single-increment, soil vapor probes near the station building on May 2, 2014 to further evaluate inhalation pathways. Details are presented in CRA's January 2015 *Soil Vapor Probe Installation and Sampling Report*.

Appendix C

Field Notes

CONTAINER COUNT (upon departure):

CONTAINER COUNT (upon arrival):

NEW CONTAINERS GENERATED? Y () N (X)

SPACE ENOUGH FOR ANOTHER EVENT? Y () N () N/A (X)

CONTAINER LOCATION: N/A

<u>0</u>	DM	<u>0</u>	BA
<u>0</u>	DM	<u>0</u>	BA
<u>1</u>	DM	<u>1</u>	BA

Page 1 of 2
**CONESTOGA-ROVERS
& ASSOCIATES**
OPERATIONAL MILEAGE: 11 Miles Operational Hours: 11

DAILY FIELD REPORT

Project Name: <u>Chevron 91356</u>	CRA Mgr: <u>Nick Greco</u>	Field Rep: <u>T. Echtermeyer / E. Lower</u>
Project Number: <u>622232</u>	Date: <u>FEB. 2, 2015</u>	Site Address:
Scope of Work: <u>Soil vapor sampling:</u>		<u>1465 Northern Lights Blvd. Anchorage, AK 99503</u>
Initial Weather Conditions: <u>8°F, CLEAR SKIES, HIGH TODAY OF</u>		

Time	Activity/Comments	SWA
0730	MEET AT HOTEL - BREAKFAST, JSA REVIEW, SOW DISCUSSION	
0800	LOAD TRUCK. MOB TO TIT, PICK UP METAL DETECTOR, Hg METER, TEDLAR BAGS, PUMP, TUBING.	
0845	MOB TO AIRGAS. PICK UP HELIUM. MOB TO SWAGELock - WORKED W/ SALES REP TOM TO GET VACUUM GAUGE.	
0900	MOB TO EDIMOND MINI STORAGE. THEY MOVED US TO UNIT E42... ALL EQUIPMENT LOOKS ACCOUNTED FOR. WE HAVE A NEW LOCK ON THE UNIT. WILL MAKE KEYCOPIES FOR GOLDEN + SEATTLE TEAMS. PICK UP SUPPLIES + DELINEATORS, SVP SHROUD BUCKET, HASP, ETC.	
1000	MOB BACK TO MARRIOTT: ASSEMBLE SV SAMPLING TRAIN.	
1020	MOB TO SITE. TAILGATE SAFETY MTG. + JSA REVIEW. SEE FORMS FOR DETAILS.	D
1055	SET UP FOR FIELD DUP AT SVP-1	
1120	SHOT IN TEST: PASS. PURGE ~ 500ML (1L TEDLAR APPROX. 1/2 INFLATED) → 15 SEC. TEST USING HELIUM DETECTOR: 0.0 PPM	
1151	BEGIN SAMPLING SVP-1. AND DUP.	
1220	SVP-1, DUP-1 COMPLETE. MOB TO SVP-2.	
1235	SVP-2 FLUSHMOUNT FULL OF ICE. TAKE PHOTO, CALL NG. TO DISCUSS	C

SWA Key:	A: Person or People	B: Equipment	C: Environmental
	D: Procedures/Processes/JSA-review/revise	E: Visitors	

CONTAINER COUNT (upon departure):

0 DM 0 BA

CONTAINER COUNT (upon arrival):

0 DM 0 BA

NEW CONTAINERS GENERATED? Y () N (X)

— DM — BA

SPACE ENOUGH FOR ANOTHER EVENT? Y () N () N/A (X)

CONTAINER LOCATION: N/A



CONESTOGA-ROVERS & ASSOCIATES

OPERATIONAL MILEAGE: 11 Miles Operational Hours: 11

DAILY FIELD REPORT

Project Name: Chevron 91356	CRA Mgr: Nick Greco	Field Rep: T. Echtermeyer / E. Lower
Project Number: 622232	Date: FEB. 2, 2015	Site Address:
Scope of Work: Soil vapor sampling:		1465 Northern Lights Blvd. Anchorage, AK 99503
Initial Weather Conditions: SEE PAGE 1		

Time	Activity/Comments	SWA
1240	WILL ATTEMPT TO CHIP OUT ICE FROM SVP-2 FLUSHMOUNT, ASSESS PROBE CONDITIONS, PER NG REQUEST. MANUALLY REMOVE ICE + USE HOT WATER TO MELT.	
1304	TUBING FREE! SET UP AT SVP-2 FOR SHUT IN TEST. PASS. PURGE ~500ML INTO TEDLAR BAG: HELIUM RDG WAS 0.0 PPM.	
1317	BEGIN SAMPLING AT SVP-2. TRY TO KEEP HELIUM SHROUD CONC. AT 20-35% THROUGHOUT	
1350	COMPLETED SVP-2 SAMPLE. MOB TO SVP-3.	
1400	SVP-3 ALSO CONTAINS ICE - NOT AS BAD AS SVP-2. MANUALLY REMOVE ICE: TOOK LESS EFFORT THAN SVP-2 (AND NO WATER NEEDED). SET UP FOR SHUT-IN TEST: PASS. PURGE ~500ML INTO BAG, He 0.0 PPM	
1426	BEGIN SAMPLING AT SVP-3. TRY TO KEEP HELIUM SHROUD CONC. AT 20-35% THROUGHOUT	
1455	COMPLETE SVP-3 SAMPLE. PACK UP, NOTIFY STATION REFS: ALL FINISHED. CALL TO NG: DONE FOR THE DAY, READY TO DEMOB.	
1510	MOB TO AIRGAS: RETURN HELIUM. RETURN METAL DETECTOR AT TIT.	
1600	PICK UP TRUCK REGISTRATION FROM ARCTIC SELF STORAGE, PER HELEN REQUEST.	

SWA Key:	A: Person or People	B: Equipment	C: Environmental
	D: Procedures/Processes/JSA-review/revise	E: Visitors	

CONTAINER COUNT (upon departure): 0 DM 0 BA
CONTAINER COUNT (upon arrival): 0 DM 0 BA
NEW CONTAINERS GENERATED? Y() N(X) - DM 1 BA
SPACE ENOUGH FOR ANOTHER EVENT? Y() N() N/A (X)
CONTAINER LOCATION: N/A



**CONESTOGA-ROVERS
& ASSOCIATES**

OPERATIONAL MILEAGE: 8 Miles Operational Hours: 1

DAILY FIELD REPORT

Project Name: Chevron 91356	CRA Mgr: Nick Greco	Field Rep: T. Echtermeyer / E. Lower
Project Number: 622232	Date: FEB 3, 2015	Site Address:
Scope of Work: Soil vapor sampling: SHIPPING SAMPLES, MOB → FAIRBANKS		1465 Northern Lights Blvd. Anchorage, AK 99503
Initial Weather Conditions: 2°F, FOGGY. HIGH TODAY OF 18°F, CLEAR SKIES		

Time	Activity/Comments	SWA
0800	LOAD TRUCK AT HOTEL, JSA REVIEW, MOB TO SWAGELOCK TO PICK UP FITTINGS FOR SVP WELL TUBING.	
0915	MOB TO DIMOND. P/U HASPS, HYDRASLEEVE WEIGHTS, MAGNET+ DOLLY. RETURN SUPPLIES. MOB TO UPS STORE TO SHIP SUMMAS → LANCASTER.	
1015	ARRIVE ONSITE. NOTIFY STATION REPS. OUTFIT SVP WELLS WITH NEW FITTINGS FROM SWAGELOCK. *NOTE* SVP-2 BROKEN DOG EARS IN LID: CANT BOLT IT SHUT.	
1035	CRA OFFSITE. NOTIFY STATION REPS.	
1245	RETURN TRUCK TO DIMOND (NEW REGISTRATION PPW IN GLOVEBOX). CAB BACK TO HOTEL.	
1600	MOB TO AIRPORT TO GO TO 211003 FAIRBANKS.	

SWA Key:	A: Person or People	B: Equipment	C: Environmental
	D: Procedures/Processes/JSA-review/revise	E: Visitors	

Appendix D

Soil Vapor Sampling Data Sheets

Conestoga-Rovers & Associates

SOIL VAPOR SAMPLING DATA SHEET

Soil Vapor Sampling Point ID: <u>SVP-1</u>	Date: <u>FEB 2, 2015</u>
Job/Site Name: <u>Chevron Site 91356</u>	Technician: <u>Tom Echtermeyer / Erin Lower</u>
Project No. <u>622232</u>	PM: <u>Nick Greco</u>
Site Address: <u>1465 Northern Lights Blvd. Anchorage, AK 99503</u>	

Vapor Sampling Apparatus Pressure Testing

Time	Vacuum Reading	Unit	Comments
1120	- 20" Hg	" Hg	PASS SHUT IN: Held vacuum > 60 sec.

Purge Volume

Calculated Purge Volume: 22.32 mL (see attached)

Time	Flow	Volume	PID Reading
1135	~1,000 ml/min	~500 ml	Not Measured

Sample Collection

Flow Control Orifice Setting: <u>1236: 177ml/min</u> <u>886: 166ml/min</u>	Summa Canister ID: <u>1236 - Parent</u> <u>886 - dup</u>
Summa Canister Size: <u>6L</u>	Analysis: <u>BTEX, Naphthalene, CH₄, O₂, CO₂, H₂</u>

Sample Start Time	Canister Vacuum	Sample End Time	Canister Vacuum
1151	<u>1236: -28" Hg (parent)</u> <u>886: -24" Hg (dup)</u>	<u>12:20 (1236) / 12:16 (886)</u>	<u>1236: -5" Hg</u> <u>886: -5" Hg</u>

Notes

SAMPLE ID: SVP-1-020215 → summa can 1236

DUP-1-020215 → summa can 886

Helium concentrations during sampling ranged from 20-35 %

Conestoga-Rovers & Associates

SOIL VAPOR SAMPLING DATA SHEET

Soil Vapor Sampling Point ID: <u>SVP-2</u>	Date: <u>FEB. 2, 2015</u>
Job/Site Name: <u>Chevron Site 91356</u>	Technician: <u>Tom Echtermeyer / Erlin Lower</u>
Project No. <u>622232</u>	PM: <u>Nick Greco</u>
Site Address: <u>1465 Northern Lights Blvd. Anchorage, AK 99503</u>	

Vapor Sampling Apparatus Pressure Testing

Time	Vacuum Reading	Unit	Comments
1307	- 20 " Hg	" Hg	PASS: MAINTAINED > 60 SEC.

Purge Volume

Calculated Purge Volume: 22.32 mL - CALCULATED CASING VOLUME (SEE CALCULATIONS FROM SVP-1)

Time	Flow	Volume	PID Reading
1310	1,000 mL/min	~500 mL	NOT MEASURED

Sample Collection

Flow Control Orifice Setting: <u>176 mL/min</u>	Summa Canister ID: <u>1174</u>
Summa Canister Size: <u>6L</u>	Analysis: <u>BTEX, Naphthalene, CH4, O2, CO2, He</u>

Sample Start Time	Canister Vacuum	Sample End Time	Canister Vacuum
1317	- 25" Hg	1348	- 5" Hg

Notes

SAMPLE ID: SVP-2-020215

WELL FLUSHMOUNT WAS FULL OF ICE WHEN OPENED. REMOVED ICE MANUALLY AND BY MELTING W/ ADDITION OF HOT WATER. IN ORDER TO ACCESS WELL TUBING, HELIUM CONCENTRATIONS DURING SAMPLING RANGED FROM 20-85%.

Conestoga-Rovers & Associates

SOIL VAPOR SAMPLING DATA SHEET

Soil Vapor Sampling Point ID: <u>SVP-3</u>	Date: <u>FEB 2, 2015</u>
Job/Site Name: <u>Chevron Site 91356</u>	Technician: <u>Tom Echtermeyer / Erin Lower</u>
Project No. <u>622232</u>	PM: <u>Nick Greco</u>
Site Address: <u>1465 Northern Lights Blvd. Anchorage, AK 99503</u>	

Vapor Sampling Apparatus Pressure Testing

Time	Vacuum Reading	Unit	Comments
1420	-20" Hg	" Hg	PASS: MAINTAIN VAC > 60 SEC.

Purge Volume

Calculated Purge Volume: 22.32 mL → CASING VOLUME

Time	Flow	Volume	PID Reading
1424	~1,000 mL/min	~500 mL	NOT MEASURED

Sample Collection

Flow Control Orifice Setting: 164 mL/min Summa Canister ID: 535
 Summa Canister Size: 6L Analysis: BTEX, Naphthalene, CH₄, O₂, CO₂, He

Sample Start Time	Canister Vacuum	Sample End Time	Canister Vacuum
1426	-27" Hg	1455	-5" Hg

Notes

SAMPLE ID: SVP-3-020215

WELL FLUSHMOUNT ALSO CONTAINED ICE, WHICH WAS REMOVED MANUALLY TO ACCESS TUBING.
HELIUM CONCENTRATIONS DURING SAMPLING RANGED FROM 20-35%.

Appendix E

Laboratory Analytical Results

Appendix F

ADEC Laboratory Data Review Checklist and Memorandum

Contaminated Sites Program
Spill Prevention and Response Division
Alaska Department of Environmental Conservation

Laboratory Data Review Checklist for Air Samples

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

DEC File Number: DEC Haz ID:

1. Laboratory

- a. Did a NELAP-certified laboratory receive and perform all of the submitted sample analyses?
 Yes No N/A (Please explain.)

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP-approved?
 Yes No N/A (Please explain.)

Comments:

2. Chain of Custody (COC)

- a. Was the COC information completed, signed and dated (including released/received by)?
 Yes No N/A (Please explain.)

Comments:

- b. Was the correct analyses requested?
 Yes No N/A (Please explain.)

Comments:

3. Laboratory Sample Receipt Documentation

- a. Was the sample condition documented? Were samples collected in gas-tight, opaque/dark Summa canisters or other DEC-approved containers? Was the canister vacuum/pressure checked, recorded upon receipt and were there no open valves?
 Yes No N/A (Please explain.)

Comments:

- b. If there were any discrepancies, were they documented? Examples include incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.
 Yes No N/A (Please explain.)

Comments:

- c. Was the data quality or usability affected? (Please explain.)

Comments:

4. Case Narrative

- a. Is there a case narrative and is it understandable?
 Yes No N/A (Please explain.)

Comments:

- b. Were there any discrepancies, errors or QC failures identified by the lab?
 Yes No N/A (Please explain.)

Comments:

- c. Were all corrective actions documented?
 Yes No N/A (Please explain.)

Comments:

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

5. Samples Results

- a. Were the correct analyses performed/reported as requested on COC?
 Yes No N/A (Please explain.)

Comments:

- b. Were the samples analyzed within 30 days of collection or within the time required by the method?
 Yes No N/A (Please explain.)

Comments:

- c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?
 Yes No N/A (Please explain.)

Comments:

- d. Was the data quality or usability affected?

Comments:

6. QC Samples

- a. Method Blank

- i. Was one method blank reported per analysis and 20 samples?
 Yes No N/A (Please explain.)

Comments:

- ii. Were all method blank results less than PQL?
 Yes No N/A (Please explain.)

Comments:

- iii. If above PQL, what samples are affected?

Comments:

- iv. Do the affected sample(s) have data flags and, if so, are the data flags clearly defined?
 Yes No N/A (Please explain.)

Comments:

No affected samples

- v. Was the data quality or usability affected? (Please explain.)

Comments:

No

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Were there one LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?
 Yes No N/A (Please explain.)

Comments:

Method EPA 25 and one batch for method 1946 did not have LCS/LCSD run

- ii. Accuracy – Were all percent recoveries (%R) reported and within method or laboratory limits? What were the project specified DQOs, if applicable?
 Yes No N/A (Please explain.)

Comments:

- iii. Precision – Were all relative percent differences (RPD) reported and were they less than method or laboratory limits? What were the project-specified DQOs, if applicable.
 Yes No N/A (Please explain.)

Comments:

- iv. If the %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No affected samples

- v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
 Yes No N/A (Please explain.)

Comments:

No affected samples

vi. Is the data quality or usability affected? (Please explain.)

Comments:

No

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

Yes No N/A (Please explain.)

Comments:

No surrogates analyzed

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits?
What were the project-specified DQOs, if applicable?

Yes No N/A (Please explain.)

Comments:

No surrogates analyzed

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A (Please explain.)

Comments:

No surrogates analyzed

iv. Was the data quality or usability affected? (Please explain.)

Comments:

No surrogates analyzed

d. Field Duplicate

i. Was one field duplicate submitted per analysis and 10 type (soil gas, indoor air, etc.) samples?

Yes No N/A (Please explain.)

Comments:

ii. Were they or was it submitted blind to the lab?

Yes No N/A (Please explain.)

Comments:

iii. Precision – Were all relative percent differences (RPD) less than the specified DQOs?
(Recommended: 25 %)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X Yes No N/A (Please explain.)

Comments:

iv. Was the data quality or usability affected? (Please explain.)

Comments:

e. Field Blank (If not used, explain why.)

Yes No X N/A (Please explain.)

Comments:

i. Were all results less than the PQL?

Yes No X N/A (Please explain.)

Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Was the data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers

a. Were other data flags/qualifiers defined and appropriate?

Yes No X N/A (Please explain.)

Comments:



MEMORANDUM

To: ADEC REF. No.: 622232

FROM: Jeffrey Cloud DATE: March 31, 2015

CC: Nick Greco

RE: **QA/QC Review**
ChevronTexaco Site 9-1356
Job # 1536288
February 2015

1.0 Introduction

The following document details a reduced validation of analytical results for air samples collected in Anchorage, Alaska during February 2015. Samples were submitted to Lancaster Laboratories, located in Lancaster, Pennsylvania.

Standard Conestoga--Rovers & Associates (CRA) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, laboratory control samples (LCS) and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 2 and applicable guidance from the document entitled "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008 subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in the methods. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were analyzed within the required holding times.

3.0 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4.0 Laboratory Control Sample (LCS) Analyses

LCS and/or laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

Organic Analyses

The LCS/LCSD contained the compounds specified in the method. All LCS recoveries and RPDs were within the associated control limits, demonstrating acceptable analytical accuracy and precision.

5.0 Field QA/QC Samples

The field QA/QC consisted of one field duplicate sample set.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample was collected and submitted "blind" to the laboratory. The RPDs associated with these duplicate samples must be less than 50 and 100 percent for water/air and soil samples, respectively. If the reported concentration in either the investigative sample or its duplicate is less than five times the practical quantitation limit (PQL), the evaluation criteria is one or two time(s) the PQL value for water and soil samples, respectively.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

6.0 Analyte Reporting

The laboratory did not report any detected concentrations below the laboratory's practical quantitation limit (PQL)/reporting limit (RL).

The tetrachloroethene results were reported outside of the upper end of the calibration range and were qualified as estimated.

7.0 Conclusion

Based on the assessment detailed in the foregoing, the summarized data are acceptable with the specific qualifications noted herein.