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# TRANSMITTAL

**DATE:** April 4, 2011

**REFERENCE NO.:** 240472

**PROJECT NAME:** 105 Fifth Street, Oakland

**TO:** Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

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Environmental Health

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| 1 | Soil Vapor Probe Installation and Sampling Report |
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**COMMENTS:**
If you have any questions regarding the content of this document, please contact Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US (electronic copy)
Clint Mercer, SC Fuels, 1800 West Katella Avenue, Orange, CA 92867
SF Data Room (electronic copy)

Completed by: Peter Schaefer Signed: Peter Schaefer

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**Denis L. Brown**
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Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Shell-branded Service Station
105 Fifth Street
Oakland, California
SAP Code 135700
Incident No. 98995757
ACEH Case No. RO0000487

Dear Mr. Wickham:

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

Denis L. Brown
Senior Program Manager

# SOIL VAPOR PROBE INSTALLATION AND SAMPLING REPORT

## SHELL-BRANDED SERVICE STATION
## 105 FIFTH STREET
## OAKLAND, CALIFORNIA

| | |
|---|---|
| SAP CODE | 135700 |
| INCIDENT NO. | 98995757 |
| AGENCY NO. | RO0000487 |

**Prepared by:**
**Conestoga-Rovers & Associates**

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APRIL 4, 2011
REF. NO. 240472 (10)
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## EXECUTIVE SUMMARY

- One near sub-slab soil vapor probe (SVP-7) was installed. CRA was unable to install proposed soil vapor probes SVP-8 and SVP-9 due to potential interference with underground utilities.
- Soil vapor samples collected from 1 fbg in SVP-7, 3 and 5 fbg in SVP-6, and 5 fbg in SVP-1 and SVP-3 contained up to 32,000,000 µg/m$^3$ TPHg (SVP-1), 7,600 µg/m$^3$ benzene (SVP-3), 340 µg/m$^3$ toluene (SVP-7), 31,000 µg/m$^3$ ethylbenzene (SVP-3), and 600 µg/m$^3$ xylenes (SVP-7).
- All soil vapor concentrations in SVP-7 were below ESLs.
- TPHg concentrations exceeded ESLs in SVP-1, SVP-3, and SVP-6, and benzene and ethylbenzene concentrations exceeded ESLs in SVP-3 and SVP-6.
- The laboratory reporting limits were above ESLs for benzene, ethylbenzene, and naphthalene in SVP-1 due to the presence of other hydrocarbons in the soil vapor sample.
- Soil vapor analytical results from SVP-3, SVP-6, and SVP-7 show that soil vapor concentrations attenuate with distance from SVP-1. Since all results from SVP-7, located adjacent to the station kiosk, are below ESLs, no further soil vapor sampling is recommended.

## 1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this report on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to document the recent soil vapor probe installation and sampling. The purpose of the investigation was to assess the potential for soil gas migration to indoor air. CRA followed the scope of work and procedures presented in our September 14, 2010 work plan (included in our *Soil Vapor Probe Installation and Sampling Report*), which was approved by Alameda County Environmental Health (ACEH) in their October 5, 2010 letter. ACEH's January 12, 2011 electronic correspondence approved extending the due date for this report from February 3, 2011 to April 4, 2011.

The site is an active Shell-branded service station located on the western corner of Fifth Street and Oak Street in Oakland, California (Figure 1). Currently, the site layout consists of a kiosk, four underground storage tanks, and two dispenser islands (Figure 2). The area surrounding the site is of mixed commercial and residential use.

A summary of previous work performed at the site and additional background information is contained in Appendix A.

## 2.0 SOIL VAPOR PROBE INSTALLATION AND SAMPLING

### 2.1 PERMIT

Alameda County Public Works Agency did not require a permit for the near sub-slab soil vapor probe installation.

### 2.2 FIELD DATES

January 5, 2011 (near sub-slab soil vapor probe installation) and December 12, 2010 and March 1, 2011 (soil vapor probe sampling).

### 2.3 DRILING COMPANY

Vapor Tech Services, Inc.

## 2.4 PERSONNEL PRESENT

Geologist Erin Swan directed the probe installation working under the supervision of California Professional Geologist Peter Schaefer.

## 2.5 DRILLING METHOD

Hammer drill.

## 2.6 NUMBER OF PROBES

CRA installed one near sub-slab soil vapor probe (SVP-7) as described below at the probe location shown on Figure 2. CRA was unable to install proposed soil vapor probes SVP-8 and SVP-9 due to potential interference with underground utilities.

## 2.7 VAPOR PROBE MATERIALS

CRA cut stainless steel tubing to a length that allows the probe to float within the sidewalk thickness to avoid obstruction of the probe with base material. The tubing was approximately 1/4-inch diameter with stainless steel compression fittings. The near sub-slab soil vapor probe was placed in the borehole so that the top of the probe is flush with the top of the curb. The top of the probe has a recessed stainless steel plug.

## 2.8 PROBE DEPTH

12 inches below grade.

## 2.9 SOIL VAPOR SAMPLING PROCEDURE

On December 12, 2010, CRA sampled soil vapor probes SVP-1, SVP-3, and SVP-6, and on March 1, 2011, we sampled near sub-slab soil vapor probe SVP-7. All soil vapor samples were collected using a lung box and Tedlar® bag.

Prior to sampling, CRA purged at least three tubing volumes of air from vapor probes SVP-1, SVP-3, and SVP-6 using a vacuum pump. Based on negligible probe tubing volume, near sub-slab soil vapor probe SVP-7 was not purged prior to sampling. CRA

collected soil vapor samples using laboratory-supplied Tedlar® bags. During sampling, CRA connected the Teflon® tubing for each vapor probe to a lung box containing the Tedlar® bag, and the lung box chamber was connected to the vacuum pump. CRA then drew the sample into the Tedlar® bag by reducing the pressure in the lung box with the vacuum pump. Each sample was labeled, documented on a chain-of-custody, and submitted to Calscience Environmental Laboratories, Inc. of Garden Grove, California for analysis within 72 hours.

To check the system for leaks, CRA placed a containment unit (or shroud) over the soil vapor probe surface casing and sampling manifold. Prior to soil vapor probe purging, CRA introduced helium into the containment unit to obtain a minimum 50 percent helium content level. CRA confirmed the helium content within the containment unit using a helium meter. The helium meter readings are presented in Section 3.2. All samples were analyzed by the laboratory for helium, and CRA presents the results in Section 3.2 and on Table 1.

### 2.10 SOIL VAPOR SAMPLING ANALYSES

Soil vapor samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA Method TO-3 (modified); for benzene, toluene, ethylbenzene, and xylenes (BTEX) and naphthalene by modified EPA Method 8260B; for oxygen and argon, carbon dioxide, and methane by ASTM D-1946; and for helium by ASTM D-1946 (M).

## 3.0 FINDINGS

### 3.1 SOIL VAPOR

The soil vapor chemical analytical data are summarized in Table 1, and TPHg and BTEX analytical results are presented on Figure 2. The laboratory analytical report is presented in Appendix B.

### 3.2 LEAK TESTING

CRA performed leak testing as described above, and 1.81 percent by volume (%*v*) helium was detected in the sample collected from SVP-7. As shown in the following table, the detection and reporting limit for helium (0.0100 %*v*) are less than 10 percent of the concentration detected in the shroud, and the samples are considered valid.

| *Probe ID* | *Helium concentration in sample (%v)* | *Helium detected in shroud (%v)* | *Maximum acceptable helium concentration in sample (%v)* |
|---|---|---|---|
| SVP-1 | <0.0100 | 50 | 5.0 |
| SVP-3 | <0.0100 | 51 | 5.1 |
| SVP-6-3 | <0.0100 | 65 | 6.5 |
| SVP-6-5 | <0.0100 | 58 | 5.8 |
| SVP-7 | 1.81 | 50 | 5.0 |

The laboratory analytical report for helium is presented in Appendix B, and CRA includes the results on Table 1.

## 4.0 CONCLUSIONS

All soil vapor concentrations in SVP-7 were below San Francisco Bay Regional Water Quality Control Board's environmental screening levels (ESLs) for commercial land use[1]. TPHg concentrations exceeded ESLs in SVP-1, SVP-3, and SVP-6; and benzene and ethylbenzene exceeded ESLs in SVP-3 and SVP-6. The laboratory reporting limits were above ESLs for benzene, ethylbenzene, and naphthalene in SVP-1 due to the presence of other hydrocarbons in the soil vapor sample.

## 5.0 RECOMMENDATIONS

Soil vapor analytical results from SVP-3, SVP-6, and SVP-7 show that soil vapor concentrations attenuate with distance from SVP-1. Since all results from SVP-7, located adjacent to the station kiosk, are below ESLs, no further soil vapor sampling is recommended.

1 *Screening for Environmental Concerns at Site With Contaminated Soil and Groundwater,* California Regional Water Quality Control Board, Interim Final - November 2007 [Revised May 2008]

All of which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG

# FIGURES

11/03/08

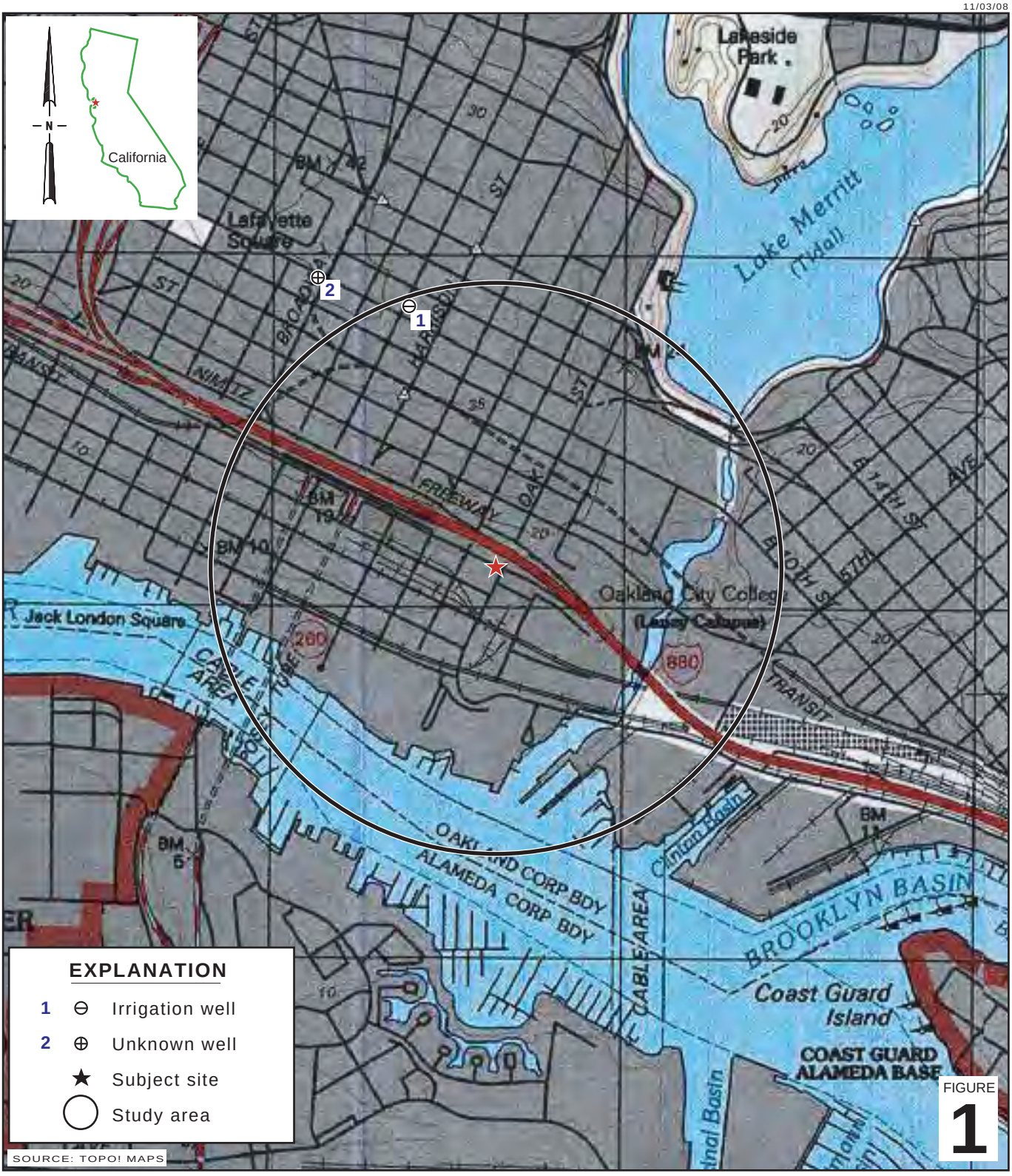


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FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

**Shell-branded Service Station**
105 Fifth Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

**Vicinity Map**

03/22/2011

# Soil Vapor Data Map

December 12, 2010 and March 1, 2011

Location of Sensitive Receptor Relative to Site
(Oakland Inner Harbor - 1,800 ft. S 29° W)

Oakland Inner Harbor
(1,800 ft.)

| Sample ID | Sample Date | Sample Depth (fbg) | TPHg (µg/m³) | Benzene (µg/m³) | Toluene (µg/m³) | Ethyl-benzene (µg/m³) | Total Xylenes (µg/m³) |
|---|---|---|---|---|---|---|---|
| SVP-7 | 3/1/2011 | 1 | 8,300 | 73 | 340 | 150 | 600 |

| Sample ID | Sample Date | Sample Depth (fbg) | TPHg (µg/m³) | Benzene (µg/m³) | Toluene (µg/m³) | Ethyl-benzene (µg/m³) | Total Xylenes (µg/m³) |
|---|---|---|---|---|---|---|---|
| SVP-6 | 12/12/2010 | 3 | **7,500,000** | **2,200** | <1,900 | **9,300** | 9,700 |
| SVP-6 | 12/12/2010 | 5 | **7,100,000** | **1,800** | <1,900 | **4,100** | <4,300 |

| Sample ID | Sample Date | Sample Depth (fbg) | TPHg (µg/m³) | Benzene (µg/m³) | Toluene (µg/m³) | Ethyl-benzene (µg/m³) | Total Xylenes (µg/m³) |
|---|---|---|---|---|---|---|---|
| SVP-3 | 12/12/2010 | 5 | **11,000,000** | **7,600** | <7,500 | **31,000** | <17,000 |

| Sample ID | Sample Date | Sample Depth (fbg) | TPHg (µg/m³) | Benzene (µg/m³) | Toluene (µg/m³) | Ethyl-benzene (µg/m³) | Total Xylenes (µg/m³) |
|---|---|---|---|---|---|---|---|
| SVP-1 | 12/12/2010 | 5 | **32,000,000** | <11,000[a] | <9,400[a] | <11,000[a] | <22,000[a] |

## EXPLANATION

- SVP-7 Soil vapor probe location (01/2011)
- SVP-6 Soil vapor probe location (07/2010)
- SVP-1 Soil vapor probe location (8/2009)
- MW-1 Monitoring well location
- T-1 Tank backfill well location
- SB-8 Soil boring location (3/2002)
- SB-6 Soil boring location (2/2001)
- SB-1 Soil boring location (7/1998)
- D-1 Soil sample location
- Overhead electrical line (OE)
- Electrical line (E)
- Telecommunication line (T)
- Unknown utility line
- Water line (W)
- Storm drain line (STM)
- Sanitary sewer line (SAN)
- Flow direction
- MH Manhole
- VB Vault Box
- Storm drain inlet
- fbg Feet below grade

**Note:** All utility locations are approximate

**Notes:**
Soil vapor sample ID, date, depth in feet below grade (fbg), and concentrations in micrograms per cubic meter (µg/m³)
**a =** Reporting limit is elevated due to high levels of non-target hydrocarbons
**TPHg =** Total petroleum hydrocarbons as gasoline
**<X =** Not detected at reporting limit X

Scale (ft): 0 20 40 80

FIGURE **2**

**Shell-branded Service Station**
105 Fifth Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

I:\Shell\6-chars\2404-\240472-Oakland 105 Fifth\240472-FIGURES\240472 SITE PLAN (F2, SOIL DATA).DWG

TABLE

# TABLE 1

## HISTORICAL SOIL VAPOR ANALYTICAL DATA
## SHELL-BRANDED SERVICE STATION
## 105 FIFTH STREET, OAKLAND, CALIFORNIA

| *Sample ID* | *Date* | *Depth (fbg)* | *TPHg* | *Benzene* | *Toluene* | *Ethyl-benzene* | *Total Xylenes* | *Naphthalene* | *Methane (%v)* | *Carbon Dioxide (%v)* | *Oxygen + Argon (%v)* | *Helium (%v)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SVP-1 | 8/25/2009 | 5 | --- | 7,200 | <1,500 | 15,000 | <6,900 | --- | --- | --- | --- | <0.0100 |
| SVP-1 | 10/1/2009 | 5 | --- | 3,600 | <19,000 | 7,800 | <8,700 | --- | --- | --- | --- | <0.0100 |
| SVP-1 | 8/9/2010 | 5 | 49,000,000 | <16,000[a,b] | <19,000[a,b] | <22,000[a,b] | <43,000[a,b] | <52,000[a] | 4.11 | 14.1 | 2.18 | <0.0100 |
| SVP-1 | 12/12/2010 | 5 | 32,000,000 | <8,000[a,b] | <9,400[a,b] | <11,000[a,b] | <22,000[a,b] | <26,000[a] | 2.24 | 10.3 | 2.03 | <0.0100 |
| SVP-2 | 8/25/2009 | 5 | --- | <3.2 | 24 | <4.3 | <17 | --- | --- | --- | --- | <0.0100 |
| SVP-3 | 8/25/2009 | 5 | --- | 20,000 | 1,200 | 61,000 | <5,200 | --- | --- | --- | --- | <0.0100 |
| SVP-3 | 10/1/2009 | 5 | --- | 22,000 | <19,000 | 66,000 | <8,700 | --- | --- | --- | --- | <0.0100 |
| SVP-3 | 8/9/2010 | 5 | 13,000,000 | 13,000[b] | <9,400[b] | 44,000[b] | <22,000[b] | <26,000 | 0.528 | 15.9 | 2.22 | <0.0100 |
| SVP-3 | 12/12/2010 | 5 | 11,000,000 | 7,600[b] | <7,500[b] | 31,000[b] | <17,000[b] | <21,000 | 0.572 | 13.0 | 1.98 | <0.0100 |
| SVP-4 | 8/25/2009 | 5 | --- | 9.0 | 24 | 50 | <17 | --- | --- | --- | --- | <0.0100 |
| SVP-5 | 8/25/2009 | 5 | --- | 280 | 21 | 1,100 | 35 | --- | --- | --- | --- | <0.0100 |
| SVP-6 | 8/9/2010 | 3 | 9,200,000 | 5,400[b] | <1,900[b] | 8,200[b] | 14,000[b] | <5,200 | 0.548 | 15.8 | 2.13 | <0.0100 |
| SVP-6 | 12/12/2010 | 3 | 7,500,000 | 2,200[b] | <1,900[b] | 9,300[b] | 9,700[b] | <5,200 | <0.500 | 15.7 | 1.93 | <0.0100 |
| SVP-6 | 8/9/2010 | 5 | 8,400,000 | 3,900[b] | <1,900[b] | 6,400[b] | 4,500[b] | <5,200 | 0.558 | 16.8 | 1.80 | <0.0100 |
| SVP-6 | 12/12/2010 | 5 | 7,100,000 | 1,800[b] | <1,900[b] | 4,100[b] | <4,300[b] | <5,200 | <0.500 | 15.6 | 2.18 | <0.0100 |
| SVP-7 | 3/1/2011 | 1 | 8,300 | 73[b] | 340[b] | 150[b] | 600[b] | <52 | <0.500 | <0.500 | 21.4 | 1.81 |
| ***ESLs*** [c] | | | ***29,000*** | ***280*** | ***180,000*** | ***3,300*** | ***58,000*** | ***240*** | ***NA*** | ***NA*** | ***NA*** | ***NA*** |

# HISTORICAL SOIL VAPOR ANALYTICAL DATA
# SHELL-BRANDED SERVICE STATION
# 105 FIFTH STREET, OAKLAND, CALIFORNIA

**Notes:**

All results in micrograms per cubic meter ($\mu g/m^3$) unless otherwise indicated.
TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method TO-3M
Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Modified EPA Method TO-15M unless otherwise noted
Naphthalene analyzed by Modified EPA Method 8260B
Methane, carbon dioxide, and oxygen + argon analyzed by ASTM D-1946
Helium analyzed by ASTM D-1946 (M)
fbg = Feet below grade
%v = Percentage by volume
<x = Not detected at reporting limit x
ESL = Environmental screening level
--- = Not analyzed
NA = No applicable ESL
Results in **bold** exceed environmental screening level

a = Reporting limit is elevated due to high levels of non-target hydrocarbons
b = BTEX by Modified EPA Method 8260B

c = San Francisco Bay Regional Water Quality Control Board (RWQCB) shallow soil gas screening level for evaluation of potential vapor intrusion concerns - commercial/industrial land use from RWQCB's *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater*, California Regional Water Quality Control Board, Interim Final - November 2007 (Revised May 2008).

# APPENDIX A

# SITE HISTORY

## SITE HISTORY

***November 1996 Dispenser Soil Sampling:*** During November and December 1996, contractors Armer/Norman & Associates of Walnut Creek, California (Armer/Norman) removed five gasoline dispensers, two diesel dispensers, associated active piping, and inactive piping to a former diesel fuel dispenser. All dispensers and associated active piping were replaced with additional secondary containment. On November 27, 1996, Cambria Environmental Technology, Inc. (Cambria) collected eight soil samples. Total petroleum hydrocarbons as gasoline (TPHg) was detected in all eight soil samples at a maximum concentration of 3,500 milligrams per kilogram (mg/kg) in sample D-8 at 5 feet below grade (fbg). Total petroleum hydrocarbons as diesel (TPHd) was detected in three soil samples at a maximum concentration of 14,000 mg/kg in sample D-7 at 5 fbg. Benzene was detected in four soil samples at a maximum concentration of 21 mg/kg in sample D-1 at 5 fbg. Methyl tertiary-butyl ether (MTBE) was detected in two soil samples at maximum concentrations of 26 mg/kg in sample D-1 at 5 fbg. Detailed results are presented in Cambria's August 7, 1997 *Dispenser Soil Sampling and Stockpile Disposal Report*. Based on the dispenser soil sampling results, Cambria filed a December 5, 1996 *Underground Storage Tank Unauthorized Release Site Report* with the Alameda County Health Care Services Agency (ACHCSA), on Shell's behalf.

***February 1998 Upgrade Activities:*** In February 1998, contractors Paradiso Mechanical of San Leandro, California installed secondary containment around the underground storage tank (UST) turbine sumps. Since the dispensers had previously been upgraded with secondary containment, no additional dispenser upgrade activities were performed. Cambria inspected the UST pit on February 26, 1998, and did not observe any field indications of hydrocarbon impact (such as staining or odors). No soil samples were collected. This information was presented in the site summary section of Cambria's May 26, 1998 *Subsurface Investigation Workplan*.

***July 1998 Subsurface Investigation:*** On July 23, 1998, Cambria advanced two soil borings northwest of the existing dispensers (SB-1 and SB-2) and three borings southeast of the dispensers (SB-3 through SB-5) to depths of between 11 and 12 fbg. TPHg was detected in two soil samples at a maximum concentration of 2.8 mg/kg in sample SB-3-5.0 at 5 fbg. TPHd was detected in soil samples from all five borings at a maximum concentration of 15 mg/kg in SB-3-5.0 at 5 fbg. No benzene was detected in any of the soil samples collected from borings SB-1 through SB-5. MTBE was detected in two soil samples at a maximum concentration of 0.48 mg/kg in SB-5-5.0 at 5 fbg.

Groundwater was first encountered at depths between 6 and 9 fbg. TPHg was detected in grab groundwater samples collected from four of the soil borings at a maximum

concentration of 90,000 micrograms per liter (µg/l) in sample SB-3. TPHd was detected in all of the grab groundwater samples at a maximum concentration of 27,000 µg/l in SB-4. Benzene was detected in all of the grab groundwater samples at a maximum concentration of 1,300 µg/l in SB-3. MTBE was detected in three of the grab groundwater samples at a maximum concentration of 4,100 µg/l in SB-4. Complete investigation results are presented in Cambria's November 18, 1998 *Subsurface Investigation Report.*

***May 1999 Monitoring Well Installations:*** On May 14, 1999, Cambria installed groundwater monitoring wells MW-1, MW-2, and MW-3 to depths of between 24 and 25 fbg. Soil samples from the well borings contained MTBE at a maximum concentration of 20.4 mg/kg, TPHg up to 1,700 mg/kg, and benzene up to 0.0369 mg/kg. Site investigation results are presented in Cambria's October 7, 1999 *Monitoring Well Installation Report.*

***2000-2001 Periodic Dual-phase Vacuum Extraction (DVE):*** Periodic DVE was performed at the site from April to October 2000 and once in March 2001. Mobile DVE is the process of applying a high vacuum through and airtight well seal to simultaneously extract soil vapors from the vadose zone and enhance groundwater extraction (GWE) from the saturated zone. Between April 2000 and March 2001, the DVE process removed an estimated 14.59 pounds of TPHg, 0.048 pounds of benzene, and 14.50 pounds of MTBE from monitoring wells MW-2 and MW-3. DVE events were discontinued due to limited chemical recovery.

***February 2001 Off-Site Investigation:*** On February 12, 2001, Cambria advanced three soil borings (SB-6, SB-7, and MW-4) to 25 fbg and converted MW-4 to a monitoring well. Soil and grab groundwater samples were analyzed for TPHg, BTEX, and MTBE, and grab groundwater samples were additionally analyzed for TPHd. No analytes were detected in soil samples collected from borings SB-6, SB-7 or MW-4. No TPHg, BTEX or MTBE were detected in grab groundwater samples collected from SB-6, SB-7, or MW-4. 1,400 µg/l TPHd was detected in grab groundwater collected from SB-7 at approximately 10 fbg. Cambria's June 7, 2001 *Offsite Subsurface Investigation* report presents the results of this investigation.

***March 2001 DVE Test:*** On March 20, 2001, Cambria performed individual short-term DVE testing on MW-2 and MW-3. Groundwater was also extracted from tank backfill well T-1, using a vacuum truck, on March 21, 2001. DVE was performed for approximately 3 hours on each well, at two different extraction rates. The total estimated groundwater-phase mass removed from MW-2, MW-3, and T-1 was 0.132 pounds TPHg, 0.001 pounds benzene, and 4.84 pounds MTBE. The total estimated

vapor-phase mass removed from MW-2 and MW-3 was 3.24 pounds TPHg, 0.006 pounds benzene, and 0.476 pounds MTBE. Vacuum influence and groundwater influence were monitored, but not detected, in surrounding wells during DVE testing. The groundwater yield during DVE testing was approximately 769 gallons, which equates to an average flow rate of 2.14 gallons per minute (gpm). Based on the DVE test results, Cambria concluded that vapor-phase petroleum hydrocarbon recovery would be possible, but not cost-effective. Cambria also concluded that liquid-phase petroleum hydrocarbon recovery was feasible, and recommended semi-monthly GWE from T-1, using a vacuum truck. Cambria's July 17, 2001 *Dual-phase Vacuum Extraction Test Report* documents the test procedures and results.

***2001 Area Well Survey:*** Cambria identified two potential receptor wells through California Department of Water Resources (DWR) records. One well of unknown use is located within a ½-mile radius of the subject site, and one irrigation well is located just outside the ½-mile study area. Well number one is of unknown use, and is located approximately 2,400 feet north (up-gradient) of the site. Although no proposed use was indicated on the well driller's log, the well is labeled "MW-6" by the driller, and it is located next to an automobile dealership. It appears likely that this well is used for groundwater monitoring. Well number two is used for irrigation, and is located approximately 3,000 feet northwest (up-gradient) of the site. Given the observed groundwater flow direction and the distance to potential receptor wells, they are highly unlikely to be impacted by the relatively minor petroleum hydrocarbon constituents remaining in soil and groundwater at the site. Cambria's June 7, 2001 report entitled *Offsite Subsurface Investigation* presents the results of the well survey, including the DWR reports.

***2001 Conduit Study:*** Cambria performed a site reconnaissance and reviewed City of Oakland engineering maps to identify utility conduits down-gradient of the site. A 12-inch diameter sanitary sewer main is located beneath Oak Street at approximately 6 fbg, and slopes to the southwest. An 8-inch diameter sanitary sewer main is located beneath Fifth Street, is sloped to the southeast, and joins the 12-inch sanitary sewer main at the intersection of Oak Street and Fifth Street. A 24-inch diameter storm drain conduit is also located beneath Oak Street, at approximately 6 fbg, and is sloped to the southwest. Since static groundwater levels at the site are shallow, permeable backfill material in sewer and storm drain trenches may be acting as preferential pathways for groundwater flow. Cambria's June 7, 2001 report entitled *Offsite Subsurface Investigation* presents the results of the conduit study.

***November 2001 - June 2006 Periodic GWE:*** Beginning in November 2001, Phillips Services Corporation of Benicia, California conducted semi-monthly mobile GWE

events from tank backfill well T-1. Mobile GWE vacuum operations consist of lowering dedicated stingers into selected monitoring wells and extracting fluids using a vacuum truck. The volume of extracted fluid is recorded and used to calculate the quantity of aqueous-phase hydrocarbon removed from the subsurface. These events were temporarily discontinued in April 2002 in anticipation of installing a fixed GWE system, and then resumed in May 2002 using vacuum trucks provided by Onyx Industrial Services of Benicia, California. Well MW-3 was added to the extraction program in June 2003, and well MW-2 was added in July 2003. Cambria obtained an encroachment permit from the City of Oakland and began including off-site well MW-6 in the extraction program on August 21, 2003. Extraction from well MW-6 was discontinued after the October 2, 2003 event due to low groundwater production. Due to minimal remaining MTBE concentrations, well T-1 was removed from the extraction program after the September 18, 2003 event and well MW-2 was removed after the November 20, 2003 event. Based on the low MTBE concentration in MW-3 during the second quarter 2005 (180 µg/l on April 15, 2005), Cambria reduced periodic GWE frequency from semi-monthly to monthly in July 2005. T-1 was added to the program again as of October 17, 2005. Periodic GWE was discontinued in June 2006, with concurrence from the Alameda County Health Care Services Agency (ACHCSA). As of June 6, 2006, a total of 197,294 gallons of water was extracted by periodic GWE, resulting in the removal of an estimated 8.57 pounds of TPHg, 0.23 pounds of benzene, and 66.23 pounds of MTBE.

***March 2002 Subsurface Investigation:*** On March 7, 2002, Cambria advanced off-site Geoprobe® borings SB-8 through SB-12, to depths ranging from 14 to 22 fbg. On March 8, 2002, Cambria installed on-site groundwater monitoring well MW-5 to a total depth of 24 fbg. No analytes were detected in soil samples from off-site borings SB-8, SB-10, SB-11, or SB-12. TPHg and MTBE were detected in soil samples at concentrations of up to 300 and 5.4 mg/kg, respectively. Grab groundwater samples were collected from all off-site soil borings. TPHg was detected in two samples at a maximum concentration of 170 µg/l in SB-8. Benzene was not detected in any of the grab groundwater samples. MTBE was detected in four samples at a maximum concentration of 7,900 µg/l in the sample from SB-10. Cambria's May 6, 2002 *Subsurface Investigation Report/Second Quarter 2002 Monitoring Report/Groundwater Extraction Evaluation Report* presents the results of this investigation and the mass transport estimate discussion.

***August 2002 Well Installation:*** On August 1, 2002, Cambria installed groundwater monitoring well MW-6 to a depth of 24 fbg. Soil samples collected from MW-6 did not contain any TPHg, BTEX, or MTBE at concentrations above the laboratory reporting

limits. Site investigation results are presented in Miller Brooks Environmental, Inc.'s (Miller Brooks) September 16, 2002 *Well Installation Report.*

***2005 Sensitive Receptor Survey Update***: Delta Environmental Consultants, Inc. (Delta) conducted a sensitive receptor survey in 2005. They did not identify any additional potential receptor wells within a ½-mile radius of the site. Delta's study area was larger, however, and they identified a drinking water well and an industrial well approximately 4,488 and 5,546 feet north of the site, respectively. Based on the distance and location relative to the site, these wells are extremely unlikely to be impacted by petroleum hydrocarbon constituents in soil and groundwater originating at the site.

***1999 - 2008 Groundwater Monitoring:*** Quarterly groundwater monitoring was conducted at the site between July 1999 and October 2008. Maximum historical groundwater concentrations were 13,800 µg/l TPHg (well MW-2, July 23, 1999), 3,700 µg/l TPHd (T-1, July 10, 2002), 1,790 µg/l benzene (MW-2, July 23, 1999), 324,000 µg/l MTBE by EPA Method 8260B (MW-3, July 23, 1999), and 24,000 µg/l tertiary-butyl alcohol (TBA) (MW-3, April 30, 2003). In the most recent groundwater monitoring event (October 2, 2008), maximum groundwater concentrations were 1,200 µg/l TPHg in MW-6, 380 µg/l TPHd in T-1, 36 µg/l benzene in T-1, 740 µg/l MTBE in MW-6, and 200 µg/l TBA in MW-2.

***2009 Soil Vapor Investigation:*** In August 2009, Conestoga-Rovers & Associates (CRA) installed five soil vapor probes (SVP-1 through SVP-5). Benzene and ethylbenzene concentrations in soil vapor samples from probes SVP-1 and SVP-3 exceeded San Francisco Bay Regional Water Quality Control Board[1] (RWQCB) environmental screening levels (ESLs) for commercial land use. All soil vapor sample detections for toluene and xylenes are below the commercial land use ESLs, and no soil vapor detections from soil vapor probes SVP-2, SVP-4, and SVP-5 exceed ESLs. Results of this investigation are presented in CRA's September 29, 2009 *Soil Vapor Probe Installation and Sampling Report.* In October 2009, CRA re-sampled soil vapor probes SVP-1 and SVP-3 and confirmed the initial results. Re-sampling results are presented in CRA's February 11, 2010 *Soil Vapor Sampling Report.*

***2010 Soil Vapor Investigation:*** In July 2010, CRA installed one soil vapor probe (SVP-6) and in August 2010 CRA sampled soil vapor from 3 and 5 fbg in SVP-6 and at 5 fbg in SVP-1 and SVP-3. The soil vapor samples contained up to 49,000,000 micrograms per cubic meter (µg/m$^3$) TPHg (SVP-1), 13,000 µg/m$^3$ benzene (SVP-3), and 44,000 µg/m$^3$ ethylbenzene (SVP-3). TPHg concentrations exceeded ESLs in SVP-1, SVP-3, and SVP-6;

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1 *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater,* California Regional Water Quality Control Board, Interim Final – November 2007 [Revised May 2008]

and benzene and ethylbenzene concentrations exceeded ESLs in SVP-3 and SVP-6. The laboratory reporting limits were above ESLs for benzene, ethylbenzene, and naphthalene in SVP-1 due to the presence of other hydrocarbons in the soil vapor samples. CRA's September 24, 2010 *Soil Vapor Probe Installation and Sampling Report* details this investigation.

# APPENDIX B

# CERTIFIED ANALYTICAL REPORTS

Calscience
Environmental
Laboratories, Inc.

December 28, 2010

Peter Schaefer
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Subject: **Calscience Work Order No.: 10-12-1216**
**Client Reference: 105 5th St., Oakland, CA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 12/15/2010 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

FOR

Calscience Environmental
Laboratories, Inc.
Xuan H. Dang
Project Manager

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 12/15/10
Work Order No: 10-12-1216
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: 105 5th St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-1 | 10-12-1216-1-A | 12/12/10 14:48 | Air | GC 36 | N/A | 12/15/10 11:59 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | 2.24 | 0.500 | 1 | | Oxygen + Argon | 2.03 | 0.500 | 1 | |
| Carbon Dioxide | 10.3 | 0.500 | 1 | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-3 | 10-12-1216-2-A | 12/12/10 15:08 | Air | GC 36 | N/A | 12/15/10 11:04 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | 0.572 | 0.500 | 1 | | Oxygen + Argon | 1.98 | 0.500 | 1 | |
| Carbon Dioxide | 13.0 | 0.500 | 1 | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-3' | 10-12-1216-3-A | 12/12/10 15:46 | Air | GC 36 | N/A | 12/15/10 11:22 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.500 | 1 | | Oxygen + Argon | 1.93 | 0.500 | 1 | |
| Carbon Dioxide | 15.7 | 0.500 | 1 | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-5' | 10-12-1216-4-A | 12/12/10 15:39 | Air | GC 36 | N/A | 12/15/10 11:42 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.500 | 1 | | Oxygen + Argon | 2.18 | 0.500 | 1 | |
| Carbon Dioxide | 15.6 | 0.500 | 1 | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| Method Blank | 099-03-002-1,195 | N/A | Air | GC 36 | N/A | 12/15/10 08:51 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.500 | 1 | | Oxygen + Argon | ND | 0.500 | 1 | |
| Carbon Dioxide | ND | 0.500 | 1 | | | | | | |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 12/15/10
Work Order No: 10-12-1216
Preparation: N/A
Method: EPA TO-3M

Project: 105 5th St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-1 | 10-12-1216-1-A | 12/12/10 14:48 | Air | GC 13 | N/A | 12/15/10 11:46 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | 32000000 | 350000 | 50 | | ug/m3 |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-3 | 10-12-1216-2-A | 12/12/10 15:08 | Air | GC 13 | N/A | 12/15/10 10:57 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | 11000000 | 70000 | 10 | | ug/m3 |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-3' | 10-12-1216-3-A | 12/12/10 15:46 | Air | GC 13 | N/A | 12/15/10 11:21 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | 7500000 | 70000 | 10 | | ug/m3 |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-5' | 10-12-1216-4-A | 12/12/10 15:39 | Air | GC 13 | N/A | 12/15/10 11:32 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | 7100000 | 70000 | 10 | | ug/m3 |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| Method Blank | 098-01-005-2,807 | N/A | Air | GC 13 | N/A | 12/15/10 09:31 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | ND | 7000 | 1 | | ug/m3 |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 12/15/10
Work Order No: 10-12-1216
Preparation: N/A
Method: ASTM D-1946 (M)

Project: 105 5th St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-1 | 10-12-1216-1-A | 12/12/10 14:48 | Air | GC 55 | N/A | 12/15/10 00:00 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-3 | 10-12-1216-2-A | 12/12/10 15:08 | Air | GC 55 | N/A | 12/15/10 00:00 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-3' | 10-12-1216-3-A | 12/12/10 15:46 | Air | GC 55 | N/A | 12/15/10 00:00 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-5' | 10-12-1216-4-A | 12/12/10 15:39 | Air | GC 55 | N/A | 12/15/10 00:00 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| Method Blank | 099-12-872-71 | N/A | Air | GC 55 | N/A | 12/15/10 00:00 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 12/15/10
Work Order No: 10-12-1216
Preparation: N/A
Method: EPA 8260B (M)
Units: ug/m3

Project: 105 5th St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-1 | 10-12-1216-1-A | 12/12/10 14:48 | Air | GC/MS HH | N/A | 12/15/10 21:32 | 101215L01 |

Comment(s): -Reporting limit is elevated due to high levels of non-target hydrocarbons.

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 8000 | 500 | | Xylenes (total) | ND | 22000 | 500 | |
| Toluene | ND | 9400 | 500 | | Naphthalene | ND | 26000 | 500 | |
| Ethylbenzene | ND | 11000 | 500 | | | | | | |
| Surrogates: | REC (%) | Control Limits | | Qual | Surrogates: | REC (%) | Control Limits | | Qual |
| 1,4-Bromofluorobenzene | 111 | 47-156 | | | 1,2-Dichloroethane-d4 | 96 | 47-156 | | |
| Toluene-d8 | 88 | 47-156 | | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-3 | 10-12-1216-2-A | 12/12/10 15:08 | Air | GC/MS HH | N/A | 12/15/10 18:51 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 7600 | 6400 | 400 | | Xylenes (total) | ND | 17000 | 400 | |
| Toluene | ND | 7500 | 400 | | Naphthalene | ND | 21000 | 400 | |
| Ethylbenzene | 31000 | 8700 | 400 | | | | | | |
| Surrogates: | REC (%) | Control Limits | | Qual | Surrogates: | REC (%) | Control Limits | | Qual |
| 1,4-Bromofluorobenzene | 111 | 47-156 | | | 1,2-Dichloroethane-d4 | 103 | 47-156 | | |
| Toluene-d8 | 91 | 47-156 | | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-3' | 10-12-1216-3-A | 12/12/10 15:46 | Air | GC/MS HH | N/A | 12/15/10 19:43 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 2200 | 1600 | 100 | | Xylenes (total) | 9700 | 4300 | 100 | |
| Toluene | ND | 1900 | 100 | | Naphthalene | ND | 5200 | 100 | |
| Ethylbenzene | 9300 | 2200 | 100 | | | | | | |
| Surrogates: | REC (%) | Control Limits | | Qual | Surrogates: | REC (%) | Control Limits | | Qual |
| 1,4-Bromofluorobenzene | 122 | 47-156 | | | 1,2-Dichloroethane-d4 | 102 | 47-156 | | |
| Toluene-d8 | 75 | 47-156 | | | | | | | |

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-6-5' | 10-12-1216-4-A | 12/12/10 15:39 | Air | GC/MS HH | N/A | 12/15/10 20:35 | 101215L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1800 | 1600 | 100 | | Xylenes (total) | ND | 4300 | 100 | |
| Toluene | ND | 1900 | 100 | | Naphthalene | ND | 5200 | 100 | |
| Ethylbenzene | 4100 | 2200 | 100 | | | | | | |
| Surrogates: | REC (%) | Control Limits | | Qual | Surrogates: | REC (%) | Control Limits | | Qual |
| 1,4-Bromofluorobenzene | 121 | 47-156 | | | 1,2-Dichloroethane-d4 | 98 | 47-156 | | |
| Toluene-d8 | 75 | 47-156 | | | | | | | |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

## Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 12/15/10
Work Order No: 10-12-1216
Preparation: N/A
Method: EPA 8260B (M)
Units: ug/m3

Project: 105 5th St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| **Method Blank** | **099-13-041-314** | **N/A** | **Air** | **GC/MS HH** | **N/A** | **12/15/10 14:44** | **101215L01** |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 16 | 1 | | Xylenes (total) | ND | 43 | 1 | |
| Toluene | ND | 19 | 1 | | Naphthalene | ND | 52 | 1 | |
| Ethylbenzene | ND | 22 | 1 | | | | | | |
| Surrogates: | REC (%) | Control Limits | | Qual | Surrogates: | REC (%) | Control Limits | | Qual |
| 1,4-Bromofluorobenzene | 112 | 47-156 | | | 1,2-Dichloroethane-d4 | 111 | 47-156 | | |
| Toluene-d8 | 90 | 47-156 | | | | | | | |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

## Quality Control - Duplicate

| | |
|---|---|
| Conestoga-Rovers & Associates | Date Received: 12/15/10 |
| 5900 Hollis Street, Suite A | Work Order No: 10-12-1216 |
| Emeryville, CA 94608-2008 | Preparation: N/A |
| | Method: EPA TO-3M |

Project: 105 5th St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared: | Date Analyzed: | Duplicate Batch Number |
|---|---|---|---|---|---|
| SVP-3 | Air | GC 13 | N/A | 12/15/10 | 101215D01 |

| Parameter | Sample Conc | DUP Conc | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|
| TPH as Gasoline | 10590000 | 10270000 | 3 | 0-20 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

| | |
|---|---|
| Date Received: | N/A |
| Work Order No: | 10-12-1216 |
| Preparation: | N/A |
| Method: | ASTM D-1946 |

Project: 105 5th St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-03-002-1,195 | Air | GC 36 | N/A | 12/15/10 | 101215L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Carbon Dioxide | 96 | 95 | 80-120 | 1 | 0-30 | |
| Oxygen + Argon | 88 | 89 | 80-120 | 1 | 0-30 | |
| Nitrogen | 88 | 89 | 80-120 | 1 | 0-30 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

| | |
|---|---|
| Conestoga-Rovers & Associates | Date Received: N/A |
| 5900 Hollis Street, Suite A | Work Order No: 10-12-1216 |
| Emeryville, CA 94608-2008 | Preparation: N/A |
| | Method: ASTM D-1946 (M) |

Project: 105 5th St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-12-872-71 | Air | GC 55 | N/A | 12/15/10 | 101215L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Helium | 115 | 114 | 80-120 | 1 | 0-30 | |
| Hydrogen | 112 | 111 | 80-120 | 1 | 0-30 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: N/A
Work Order No: 10-12-1216
Preparation: N/A
Method: EPA 8260B (M)

Project: 105 5th St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-13-041-314 | Air | GC/MS HH | N/A | 12/15/10 | 101215L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Benzene | 91 | 91 | 60-156 | 0 | 0-40 | |
| Toluene | 109 | 110 | 56-146 | 1 | 0-43 | |
| Ethylbenzene | 108 | 109 | 52-154 | 0 | 0-38 | |
| Xylenes (total) | 119 | 119 | 52-148 | 0 | 0-38 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Glossary of Terms and Qualifiers

Work Order Number: 10-12-1216

| Qualifier | Definition |
|---|---|
| * | See applicable analysis comment. |
| < | Less than the indicated value. |
| > | Greater than the indicated value. |
| 1 | Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification. |
| 2 | Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification. |
| 3 | Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification. |
| 4 | The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification. |
| 5 | The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification. |
| B | Analyte was present in the associated method blank. |
| BU | Sample analyzed after holding time expired. |
| E | Concentration exceeds the calibration range. |
| ET | Sample was extracted past end of recommended max. holding time. |
| J | Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated. |
| ME | LCS Recovery Percentage is within LCS ME Control Limit range. |
| ND | Parameter not detected at the indicated reporting limit. |
| Q | Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater. |
| X | % Recovery and/or RPD out-of-range. |
| Z | Analyte presence was not confirmed by second column or GC/MS analysis. |

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

# Shell Oil Products Chain Of Custody Record

**LAB (LOCATION)**

- ☑ CALSCIENCE (_____)
- ☐ SPL (_____)
- ☐ XENCO (_____)
- ☐ TEST AMERICA (_____)
- ☐ OTHER (_____)

**Please Check Appropriate Box:**

| | | |
|---|---|---|
| ☑ ENV. SERVICES | ☐ MOTIVA RETAIL | ☐ SHELL RETAIL |
| ☐ MOTIVA SD&CM | ☑ CONSULTANT | ☐ LUBES |
| ☐ SHELL PIPELINE | ☐ OTHER _____ | |

**Print Bill To Contact Name:** Peter Schaefer

**INCIDENT # (ENV SERVICES):** 98995757 ☐ CHECK IF NO INCIDENT # APPLIES

**PO #:**

**SAP #:** 1357000

DATE: 12/12/2010

PAGE: 1 of 1

| | |
|---|---|
| SAMPLING COMPANY: Conestoga-Rovers & Associates | LOG CODE: CRAW |
| SITE ADDRESS: Street and City: 105 Fifth St., Oakland | State: CA |
| GLOBAL ID NO.: TO600102116 | |
| ADDRESS: 5900 Hollis Street, Suite A, Emeryville, CA 94608 | |
| EDF DELIVERABLE TO (Name, Company, Office Location): Brenda Carter, CRA, Emeryville | PHONE NO.: 510-420-3343 |
| E-MAIL: shelledf@craworld.com | CONSULTANT PROJECT NO.: 240472 |
| PROJECT CONTACT (Hardcopy or PDF Report to): Peter Schaefer | |
| SAMPLER NAME(S) (Print): Erin ~~Reinhart Koyle~~ Swan | LAB USE ONLY: 10-12-12/16 |
| TELEPHONE: 510-420-3319 | FAX: 510-420-9170 |
| E-MAIL: pschaefer@craworld.com | |

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY:

**SPECIAL INSTRUCTIONS OR NOTES :**

Must be analysis within 72 hours.

please report results in µg/m3

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED

**REQUESTED ANALYSIS**

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | NONE | OTHER | NO. OF CONT. | TPH - Purgeable (8260B) | TPHg (8260B) | BTEX (8260B) | Oxygen plus argon, Carbon Dioxide, Methane, & Helium (ASTM D 1946 M) | Naphthalene (8260B) | TEMPERATURE ON RECEIPT C° / Container PID Readings or Laboratory Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVP-1 | 12/12/10 | 2:48 | Vapor | | | | | X | 1 | | X | X | X | X | |
| 2 | SVP-3 | 12/12/10 | 3:08 | Vapor | | | | | X | 1 | | X | X | X | X | |
| 3 | SVP-6-3' | 12/12/10 | 3:46 | Vapor | | | | | X | 1 | | X | X | X | X | |
| 4 | SVP-6-5' | 12/12/10 | 3:39 | Vapor | | | | | X | 1 | | X | X | X | X | |
| | ~~Spike~~ | | | ~~Vapor~~ | | | | | X | | | X | X | X | X | |

| | | | |
|---|---|---|---|
| Relinquished by: (Signature) Erin Swan | Received by: (Signature) CEL | Date: 12/13/10 | Time: 5:08 |
| Relinquished by: (Signature) GSO 12/14/10 1730 | Received by: (Signature) | Date: 12/15/10 | Time: 10:30 |
| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |

05/2/06 Revision

GSO

**< WebShip > > > > >**

800-322-5555 www.gso.com

*Ship From:*
ALAN KEMP
CAL SCIENCE- CONCORD
5063 COMMERCIAL CIRCLE #H
CONCORD, CA 94520

*Ship To:*
SAMPLE RECEIVING
CEL
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD:
$0.00

Reference:
CRA

Delivery Instructions:

Signature Type:
SIGNATURE REQUIRED

Tracking #: 515555747

**NPS**

**ORC** **D**

**GARDEN GROVE**

**D92843A**

87115023

Print Date : 12/14/10 15:33 PM

**Package 1 of 1**

Send Label To Printer | ☑ Print All | Edit Shipment | Finish

## LABEL INSTRUCTIONS:

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

STEP 1 - Use the "Send Label to Printer" button on this page to print the shipping label on a laser or inkjet printer.

STEP 2 - Fold this page in half.

STEP 3 - Securely attach this label to your package, do not cover the barcode.

STEP 4 - Request an on-call pickup for your package, if you do not have scheduled daily pickup service or Drop-off your package at the nearest GSO drop box. Locate nearest GSO dropbox locations using this link.

## ADDITIONAL OPTIONS:

Send Label Via Email | Create Return Label

## TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all the service terms and conditions described in this section. Our liability for loss or damage to any package is limited to your actual damages or $100 whichever is less, unless you pay for and declare a higher authorized value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your loss or damage. In any event, we will not be liable for any damage, whether direct, incidental, special or consequential, in excess of the declared value of a shipment whether or not we had knowledge that such damage might be incurred including but not limited to loss of income or profit. We will not be liable for your acts or omissions, including but not limited to improper or insufficient packaging, securing, marking or addressing. Also, we will not be liable if you or the recipient violates any of the terms of our agreement. We will not be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, act of public enemies, war, strikes, or civil commotion. The highest declared value for our GSO Priority Letter or GSO Priority Package is $500. For other shipments the highest declared value is $10,000 unless your package contains items of "extraordinary value", in which case the highest declared value we allow is $500. Items of "extraordinary value" include, but or not limited to, artwork, jewelry, furs, precious metals, tickets, negotiable instruments and other items with intrinsic value.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-12-☐2☑1☑6

# SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: CRA DATE: 12/15/10

**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

**Temperature** ____•____ °C + 0.5 °C (CF) = ____•____ °C ☐ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

**Ambient Temperature:** ☑ Air ☐ Filter **Initial:** PS

**CUSTODY SEALS INTACT:**

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A **Initial:** PS

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Initial:** PS

| SAMPLE CONDITION: | Yes | No | N/A |
|---|---|---|---|
| Chain-Of-Custody (COC) document(s) received with samples | ☑ | ☐ | ☐ |
| COC document(s) received complete | ☑ | ☐ | ☐ |
| ☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels. | | | |
| ☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished. | | | |
| Sampler's name indicated on COC | ☑ | ☐ | ☐ |
| Sample container label(s) consistent with COC | ☑ | ☐ | ☐ |
| Sample container(s) intact and good condition | ☑ | ☐ | ☐ |
| Proper containers and sufficient volume for analyses requested | ☑ | ☐ | ☐ |
| Analyses received within holding time | ☑ | ☐ | ☐ |
| pH / Residual Chlorine / Dissolved Sulfide received within 24 hours | ☐ | ☐ | ☑ |
| Proper preservation noted on COC or sample container | ☐ | ☐ | ☑ |
| ☐ Unpreserved vials received for Volatiles analysis | | | |
| Volatile analysis container(s) free of headspace | ☐ | ☐ | ☑ |
| Tedlar bag(s) free of condensation | ☑ | ☐ | ☐ |

**CONTAINER TYPE:**

**Solid:** ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

**Water:** ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na**

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

**Air:** ☑Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** PS

**Container:** **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** MC

**Preservative:** **h:** HCL **n:** $HNO_3$ **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** $H_3PO_4$ **s:** $H_2SO_4$ **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** PS

Calscience
Environmental
Laboratories, Inc.

Supplemental Report 1

March 22, 2011

The original report has been revised/corrected.

Peter Schaefer
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Subject: **Calscience Work Order No.: 11-03-0201**
**Client Reference: 105 Fifth St., Oakland, CA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 3/3/2011 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

For

Calscience Environmental
Laboratories, Inc.
Xuan Dang
Project Manager

## Case Narrative

## Work Order # 11-03-0201

## Modified EPA 8260 in Air

This method is used to determine the concentration of BTEX/Oxygenates/Naphthalene having a vapor pressure greater than $10^{-1}$ torr at 25°C at standard pressure in an air matrix. The method is similar to EPA TO-15 and uses air standards for calibration. Method specifics are listed in the table below. A known volume of sample is directed from the container (Summa® canister or Tedlar™ bag) through a solid multi-module (glass beads, tenex, cryofocuser) concentrator. Following concentration, the VOCs are thermally desorbed onto a gas chromatographic column for separation and then detected on a mass selective detector.

### Comparison of CalscienceTO-15(Modified) versus EPA 8260 (Modified) in Air

| Requirement | Calscience TO-15(M) | Calscience EPA 8260(M) in Air |
|---|---|---|
| BFB Acceptance Criteria | SW846 Protocol | SW846 Protocol |
| Initial Calibration | Allowable % RSD for each Target Analyte <= 30%, 10% of analytes allowed <=40% | Allowable % RSD for each Target Analyte <= 30%, 10% of analytes allowed <= 40% |
| Initial Calibration Verification (ICV) - Second Source Standard (LCS) | Analytes contained in the LCS standard evaluated against historical control limits for the LCS | BTEX and MTBE only - <= 30%D |
| Daily Calibration Verification (CCV) | **Full List Analysis:** Allowable % Difference for each CCC analyte is <= 30% | BTEX and MTBE only - <= 30%D |
| | **Target List Analysis:** Allowable % Difference for each target analytes is <= 30% | |
| Daily Calibration Verification (CCV) - Internal Standard Area Response | Allowable +/- 50% (Range: 50% to 150%) | Allowable +/- 50% (Range: 50% to 150%) |
| Method Blank, Laboratory Control Sample and Sample - Internal Standard Area Response | Allowable +/- 50% of the mean area response of most recent Calibration Verification (Range: 50% to 150%) | Allowable +/- 50% of the mean area response of the most recent Calibration Verification (Range: 50% to 150%) |
| Surrogates | 1,4-Bromoflurobenzene, 1,2-Dichloroethane-d4 and Toluene-d8 - % Recoveries based upon historical control limits +/-3S | 1,4-Bromoflurobenzene, 1,2-Dichloroethane-d4 and Toluene-d8 - % Recoveries based upon historical control limits +/-3S |

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

| | |
|---|---|
| Date Received: | 03/03/11 |
| Work Order No: | 11-03-0201 |
| Preparation: | N/A |
| Method: | ASTM D-1946 |
| Units: | %v |

Project: 105 Fifth St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-7 | 11-03-0201-1-A | 03/01/11 17:40 | Air | GC 36 | N/A | 03/03/11 11:06 | 110303L01 |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.500 | 1 | | Oxygen + Argon | 21.4 | 0.500 | 1 | |
| Carbon Dioxide | ND | 0.500 | 1 | | | | | | |

| Method Blank | 099-03-002-1,241 | N/A | Air | GC 36 | N/A | 03/03/11 08:56 | 110303L01 |
|---|---|---|---|---|---|---|---|

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.500 | 1 | | Oxygen + Argon | ND | 0.500 | 1 | |
| Carbon Dioxide | ND | 0.500 | 1 | | Nitrogen | ND | 0.500 | 1 | |
| Carbon Monoxide | ND | 0.500 | 1 | | | | | | |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

## Analytical Report

| | | | |
|---|---|---|---|
| Conestoga-Rovers & Associates | | Date Received: | 03/03/11 |
| 5900 Hollis Street, Suite A | | Work Order No: | 11-03-0201 |
| Emeryville, CA 94608-2008 | | Preparation: | N/A |
| | | Method: | EPA TO-3M |

Project: 105 Fifth St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| SVP-7 | 11-03-0201-1-A | 03/01/11 17:40 | Air | GC 13 | N/A | 03/03/11 11:27 | 110303L01 |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | 8300 | 7000 | 1 | | ug/m3 |

| Method Blank | 098-01-005-2,958 | N/A | Air | GC 13 | N/A | 03/03/11 08:51 | 110303L01 |
|---|---|---|---|---|---|---|---|

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| TPH as Gasoline | ND | 7000 | 1 | | ug/m3 |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 03/03/11
Work Order No: 11-03-0201
Preparation: N/A
Method: ASTM D-1946 (M)

Project: 105 Fifth St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| **SVP-7** | **11-03-0201-1-A** | **03/01/11 17:40** | **Air** | **GC 55** | **N/A** | **03/03/11 14:13** | **110303L01** |

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | 1.81 | 0.0100 | 1 | | %v |

| Method Blank | 099-12-872-83 | N/A | Air | GC 55 | N/A | 03/03/11 13:52 | 110303L01 |
|---|---|---|---|---|---|---|---|

| Parameter | Result | RL | DF | Qual | Units |
|---|---|---|---|---|---|
| Helium | ND | 0.0100 | 1 | | %v |
| Hydrogen | ND | 0.0100 | 1 | | %v |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

# Analytical Report

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: 03/03/11
Work Order No: 11-03-0201
Preparation: N/A
Method: EPA 8260B (M)
Units: ug/m3

Project: 105 Fifth St., Oakland, CA



| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---|---|---|---|---|---|---|---|
| **SVP-7** | **11-03-0201-1-A** | **03/01/11 17:40** | **Air** | **GC/MS HH** | **N/A** | **03/03/11 17:32** | **110303L01** |

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 73 | 16 | 1 | | Xylenes (total) | 600 | 43 | 1 | |
| Toluene | 340 | 19 | 1 | | Naphthalene | ND | 52 | 1 | |
| Ethylbenzene | 150 | 22 | 1 | | | | | | |

| Surrogates: | REC (%) | Control Limits | Qual | Surrogates: | REC (%) | Control Limits | Qual |
|---|---|---|---|---|---|---|---|
| 1,4-Bromofluorobenzene | 97 | 47-156 | | 1,2-Dichloroethane-d4 | 95 | 47-156 | |
| Toluene-d8 | 98 | 47-156 | | | | | |

| Method Blank | 099-13-041-394 | N/A | Air | GC/MS HH | N/A | 03/03/11 13:38 | 110303L01 |
|---|---|---|---|---|---|---|---|

| Parameter | Result | RL | DF | Qual | Parameter | Result | RL | DF | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 16 | 1 | | Xylenes (total) | ND | 43 | 1 | |
| Toluene | ND | 19 | 1 | | Naphthalene | ND | 52 | 1 | |
| Ethylbenzene | ND | 22 | 1 | | | | | | |

| Surrogates: | REC (%) | Control Limits | Qual | Surrogates: | REC (%) | Control Limits | Qual |
|---|---|---|---|---|---|---|---|
| 1,4-Bromofluorobenzene | 101 | 47-156 | | 1,2-Dichloroethane-d4 | 96 | 47-156 | |
| Toluene-d8 | 101 | 47-156 | | | | | |

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

## Quality Control - Duplicate

| | | | |
|---|---|---|---|
| Conestoga-Rovers & Associates | | Date Received: | 03/03/11 |
| 5900 Hollis Street, Suite A | | Work Order No: | 11-03-0201 |
| Emeryville, CA 94608-2008 | | Preparation: | N/A |
| | | Method: | EPA TO-3M |

Project: 105 Fifth St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared: | Date Analyzed: | Duplicate Batch Number |
|---|---|---|---|---|---|
| **11-03-0199-2** | **Air** | **GC 13** | **N/A** | **03/03/11** | **110303D01** |

| Parameter | Sample Conc | DUP Conc | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|
| TPH as Gasoline | 507700 | 522100 | 3 | 0-20 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608-2008

Date Received: N/A
Work Order No: 11-03-0201
Preparation: N/A
Method: ASTM D-1946

Project: 105 Fifth St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-03-002-1,241 | Air | GC 36 | N/A | 03/03/11 | 110303L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Carbon Dioxide | 107 | 102 | 80-120 | 5 | 0-30 | |
| Oxygen + Argon | 91 | 91 | 80-120 | 1 | 0-30 | |
| Nitrogen | 94 | 94 | 80-120 | 1 | 0-30 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

| | |
|---|---|
| Conestoga-Rovers & Associates | Date Received: N/A |
| 5900 Hollis Street, Suite A | Work Order No: 11-03-0201 |
| Emeryville, CA 94608-2008 | Preparation: N/A |
| | Method: ASTM D-1946 (M) |

Project: 105 Fifth St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-12-872-83 | Air | GC 55 | N/A | 03/03/11 | 110303L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Helium | 99 | 98 | 80-120 | 1 | 0-30 | |
| Hydrogen | 110 | 110 | 80-120 | 1 | 0-30 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Quality Control - LCS/LCS Duplicate

| | |
|---|---|
| Conestoga-Rovers & Associates | Date Received: N/A |
| 5900 Hollis Street, Suite A | Work Order No: 11-03-0201 |
| Emeryville, CA 94608-2008 | Preparation: N/A |
| | Method: EPA 8260B (M) |

Project: 105 Fifth St., Oakland, CA

| Quality Control Sample ID | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number |
|---|---|---|---|---|---|
| 099-13-041-394 | Air | GC/MS HH | N/A | 03/03/11 | 110303L01 |

| Parameter | LCS %REC | LCSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|---|---|---|---|---|---|---|
| Benzene | 114 | 115 | 60-156 | 1 | 0-40 | |
| Toluene | 111 | 112 | 56-146 | 0 | 0-43 | |
| Ethylbenzene | 110 | 110 | 52-154 | 0 | 0-38 | |
| Xylenes (total) | 108 | 107 | 52-148 | 1 | 0-38 | |

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

## Glossary of Terms and Qualifiers

Work Order Number: 11-03-0201

| Qualifier | Definition |
|---|---|
| * | See applicable analysis comment. |
| < | Less than the indicated value. |
| > | Greater than the indicated value. |
| 1 | Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification. |
| 2 | Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification. |
| 3 | Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification. |
| 4 | The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification. |
| 5 | The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification. |
| B | Analyte was present in the associated method blank. |
| BU | Sample analyzed after holding time expired. |
| E | Concentration exceeds the calibration range. |
| ET | Sample was extracted past end of recommended max. holding time. |
| J | Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated. |
| ME | LCS Recovery Percentage is within LCS ME Control Limit range. |
| ND | Parameter not detected at the indicated reporting limit. |
| Q | Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater. |
| X | % Recovery and/or RPD out-of-range. |
| Z | Analyte presence was not confirmed by second column or GC/MS analysis. |

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

# Shell Oil Products Chain Of Custody Record

**LAB (LOCATION)**

- ☑ CALSCIENCE (_____)
- ☐ SPL (_____)
- ☐ XENCO (_____)
- ☐ TEST AMERICA (_____)
- ☐ OTHER (_____)

**Please Check Appropriate Box:**

| | | |
|---|---|---|
| ☑ ENV. SERVICES | ☐ MOTIVA RETAIL | ☐ SHELL RETAIL |
| ☐ MOTIVA SD&CM | ☑ CONSULTANT | ☐ LUBES |
| ☐ SHELL PIPELINE | ☐ OTHER _____ | |

**Print Bill To Contact Name:** Peter Schaefer

**INCIDENT # (ENV SERVICES):** 9 8 9 9 5 7 5 7 ☐ CHECK IF NO INCIDENT # APPLIES

DATE: 3/1/11

**PO #**

**SAP #:** 1 3 5 7 0 0

PAGE: 1 of 1

| SAMPLING COMPANY: | LOG CODE: |
|---|---|
| Conestoga-Rovers & Associates | CRAW |

ADDRESS: 5900 Hollis Street, Suite A, Emeryville, CA 94608

PROJECT CONTACT (Hardcopy or PDF Report to): Peter Schaefer

| TELEPHONE: | FAX: | E-MAIL: |
|---|---|---|
| 510-420-3319 | 510-420-9170 | pschaefer@craworld.com |

| SITE ADDRESS: Street and City | State | GLOBAL ID NO.: |
|---|---|---|
| 105 Fifth St., Oakland | CA | TO600102116 |

| EDF DELIVERABLE TO (Name, Company, Office Location) | PHONE NO.: | E-MAIL: | CONSULTANT PROJECT NO |
|---|---|---|---|
| Brenda Carter, CRA, Emeryville | 510-420-3343 | shelledf@craworld.com | 240472 |

SAMPLER NAME(S) (Print): Erin Swan

LAB USE ONLY: 11-03-0201

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY:

**SPECIAL INSTRUCTIONS OR NOTES :**

Must be analysis within 72 hours.

Please report results in µg/m3 for 8260, and report results in % by volume for ASTM D 1946(M).

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☐ RECEIPT VERIFICATION REQUESTED

**REQUESTED ANALYSIS**

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | NONE | OTHER | NO. OF CONT. | TPHg (8260B) | BTEX (8260B) | Oxygen plus argon, Carbon Dioxide, Methane, & Helium (ASTM D 1946 M) | Naphthalene (8260B) | TEMPERATURE ON RECEIPT C° / Container PID Readings or Laboratory Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVP-7 | 3/1/11 | 5:40 | Vapor | | | | | X | 1 | X | X | X | X | Tedlar bag |

| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |
|---|---|---|---|
| Erin Swan | Secure location | 3/1/11 | 6:45 |
| [illegible] | To Molloy CSE | 3/2/11 | 0935 |
| [illegible] 3/2/11 1730 | [illegible] CA | 03/03/11 | 0930 |

05/2/06 Revision

D20

Page 1 of 1

GSO

WebShip > > > > >

800-322-5555 www.gso.com

*Ship From:*
ALAN KEMP
CAL SCIENCE- CONCORD
5063 COMMERCIAL CIRCLE #H
CONCORD, CA 94520

*Ship To:*
SAMPLE RECEIVING
CEL
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD:
$0.00

Reference:
CRA, CARDNO, ERI

Delivery Instructions:

Signature Type:
SIGNATURE REQUIRED

Tracking #: 516061123

NPS

ORC

D

GARDEN GROVE

D92843A

89118927

Print Date : 03/02/11 14:13 PM

Package 1 of 1

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-03-0201

# SAMPLE RECEIPT FORM

Box 1 of 1

CLIENT: CRA DATE: 03/03/11

**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature ____.____ °C + 0.5 °C (CF) = ____.____ °C ☐ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: ☑ Air ☐ Filter Initial: NC

**CUSTODY SEALS INTACT:**

☑ Box ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: NC

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: NC

| SAMPLE CONDITION: | Yes | No | N/A |
|---|---|---|---|
| Chain-Of-Custody (COC) document(s) received with samples | ☑ | ☐ | ☐ |
| COC document(s) received complete | ☑ | ☐ | ☐ |
| ☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels. | | | |
| ☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished. | | | |
| Sampler's name indicated on COC | ☑ | ☐ | ☐ |
| Sample container label(s) consistent with COC | ☑ | ☐ | ☐ |
| Sample container(s) intact and good condition | ☑ | ☐ | ☐ |
| Proper containers and sufficient volume for analyses requested | ☑ | ☐ | ☐ |
| Analyses received within holding time | ☑ | ☐ | ☐ |
| pH / Residual Chlorine / Dissolved Sulfide received within 24 hours | ☐ | ☐ | ☑ |
| Proper preservation noted on COC or sample container | ☐ | ☐ | ☑ |
| ☐ Unpreserved vials received for Volatiles analysis | | | |
| Volatile analysis container(s) free of headspace | ☐ | ☐ | ☑ |
| Tedlar bag(s) free of condensation | ☑ | ☐ | ☐ |

**CONTAINER TYPE:**

**Solid:** ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

**Water:** ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na** ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

**Air:** ☑ Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** NC

**Container:** C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** N

**Preservative:** h: HCL n: $HNO_3$ na$_2$: $Na_2S_2O_3$ na: NaOH p: $H_3PO_4$ s: $H_2SO_4$ znna: $ZnAc_2$+NaOH f: Field-filtered **Scanned by:** C