CONESTOGA-ROVERS & ASSOCIATES

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TRANSMITTAL

DATE: December 7, 2010

REFERENCE NO.: 240414

PROJECT NAME: 540 Hegenberger Road, Oakland

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

RECEIVED
10:02 am, Dec 10, 2010
Alameda County
Environmental Health

Please find enclosed:
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- ☒ Final
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QUANTITY	DESCRIPTION
1	Soil Vapor Probe Installation and Soil Vapor Sampling Work Plan

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐
- ☐

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)
SF Data Room (electronic copy)

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: **Correspondence File**

Denis L. Brown
Shell Oil Products US
HSE – Environmental Services
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Tel (707) 865 0251
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Email denis.l.brown@shell.com

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

Re: Shell-branded Service Station
540 Hegenberger Road
Oakland, California
SAP Code 135694
Incident No. 98995752
ACEH Case No. RO0000223

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 SOIL VAPOR SAMPLING WORK PLAN

SHELL-BRANDED SERVICE STATION
540 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

SAP CODE	135694
INCIDENT NO.	98995752
AGENCY NO.	RO0000223

Prepared by:
Conestoga-Rovers & Associates

5900 Hollis Street, Suite A
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DECEMBER 7, 2010
REF. NO. 240414 (7)
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TABLE OF CONTENTS

LIST OF FIGURES
(Following Text)

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to assess potential for soil vapor intrusion prior to obtaining case closure as requested in Alameda County Environmental Health's October 11, 2010 letter.

The subject site is an active Shell-branded service station located on the southeast corner of the Hegenberger Road and Edes Avenue intersection in a commercial area of Oakland, California (Figure 1). The site layout (Figure 2) includes one station building, two dispenser islands, four underground storage tanks, and a car wash.

A summary of previous work performed at the site and additional background information is presented in CRA's February 26, 2010 *Closure Request* and is not repeated herein.

2.0 SOIL VAPOR PROBE INSTALLATION

CRA proposes to install three sub-slab soil vapor probes to assess soil vapor concentrations beneath the station building at the locations shown on Figure 2. Specific tasks are described below.

2.1 PERMIT

Alameda County Public Works Agency does not require a permit to install sub-slab soil vapor probes.

2.2 HEALTH AND SAFETY PLAN (HASP)

CRA will prepare a HASP to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by each site worker.

2.3 UTILITY CLEARANCE

CRA will mark the proposed probe locations, and the locations will be cleared by Underground Service Alert and a private utility locating service prior to drilling.

2.4 PROBE INSTALLATION

CRA proposes to install three sub-slab soil vapor probes (SVP-1 through SVP-3) into the concrete slab beneath the station building (Figure 2).

Assuming the absence of subsurface obstructions, a rotary hammer drill will be used to drill a "shallow" (approximately 1-inch deep) outer borehole (approximately 7/8-inch diameter) that partially penetrates the floor slab. Cuttings will be removed using a towel moistened with distilled water or a portable vacuum cleaner.

The rotary hammer drill will then be used to drill a smaller diameter inner borehole within the center of the outer borehole (approximately 3/8-inch diameter) through the floor material and approximately 3 inches into the sub-slab bedding material to create an open cavity. The outer borehole will be cleaned a second time with a moistened towel or a portable vacuum cleaner.

Stainless steel tubing will be cut to a length that allows the probe to float within the slab thickness to avoid obstruction of the probe with sub-slab bedding material. The tubing will be approximately 1/4-inch diameter. Where necessary, the compression fittings will be stainless steel (approximately 1/4-inch outside diameter and 1/8-inch National Pipe Thread) Swagelok® female thread connectors. The probes will be constructed prior to drilling to minimize exposure time, or venting, of the sub-slab bedding material through the open borehole.

Each sub-slab soil vapor probe will be placed in the borehole so that the top of the probe is flush with the top of the floor. The top of the probe will have a recessed stainless steel plug. A quick-drying, Portland cement slurry will be injected or pushed into the annular space between the probe and the outer borehole. The cement will be allowed to dry for at least 24 hours prior to sampling.

CRA will perform this work under the supervision of a professional geologist or engineer.

3.0 SOIL VAPOR PROBE SAMPLING

At least 2 weeks following probe installation, CRA will collect soil vapor samples from each sampling point. Sampling is affected by rain. CRA's standard procedure is to allow 2 days or more after a heavy rain event prior to collecting soil vapor samples.

3.1 PROBE SAMPLING

CRA will sample soil vapor probes SVP-1 through SVP-3 using a vacuum pump and Tedlar® bags. Prior to sampling, CRA will purge at least three tubing volumes of air from the probes using a vacuum pump. Then CRA will attach a sealed "lung sampler" containing a 1-liter Tedlar® bag to the probe and attach the vacuum pump to the box. The vacuum pump will lower the pressure in the "lung sampler" and draw air from the probe into the Tedlar® bag. To avoid breakage, CRA will fill the bags no more than two-thirds full. Each sample will be labeled, entered onto a chain-of-custody, and placed into a protective box at room temperature for transport to a State of California-certified laboratory for analysis within 72 hours.

3.2 LEAK TESTING

To check the system for leaks, CRA will cover the soil gas probe surface casing and sampling equipment with a containment unit (or shroud). Prior to soil gas probe purging, CRA will introduce helium into the containment unit to obtain a minimum 50 percent helium content level. CRA will confirm the helium content within the containment unit using a helium meter and will record the helium meter readings in our field notes. Helium will continue to be introduced to the containment unit during soil gas probe purging and sampling.

All samples will be analyzed in a laboratory for helium. In the event that the soil vapor samples contain a helium content of greater than 10 percent of the source concentration (i.e., 10 percent of the helium content measured within the containment unit), the soil gas sample will be considered invalid.

3.3 CHEMICAL ANALYSES

Vapor samples will be analyzed for total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, xylenes, methyl tertiary-butyl ether, tertiary-butyl alcohol, and

naphthalene by EPA Method 8260B and for oxygen plus argon, carbon dioxide, methane, and helium by ASTM D Method 1946 (M).

4.0 REPORT PREPARATION

Following receipt of the analytical results from the laboratory, CRA will prepare a written report, which will include field procedures, tabulated analytical data, boring logs, and analytical laboratory reports.

5.0 SCHEDULE

CRA will implement the soil vapor probe installations upon receiving ACEH's written approval of this work plan.

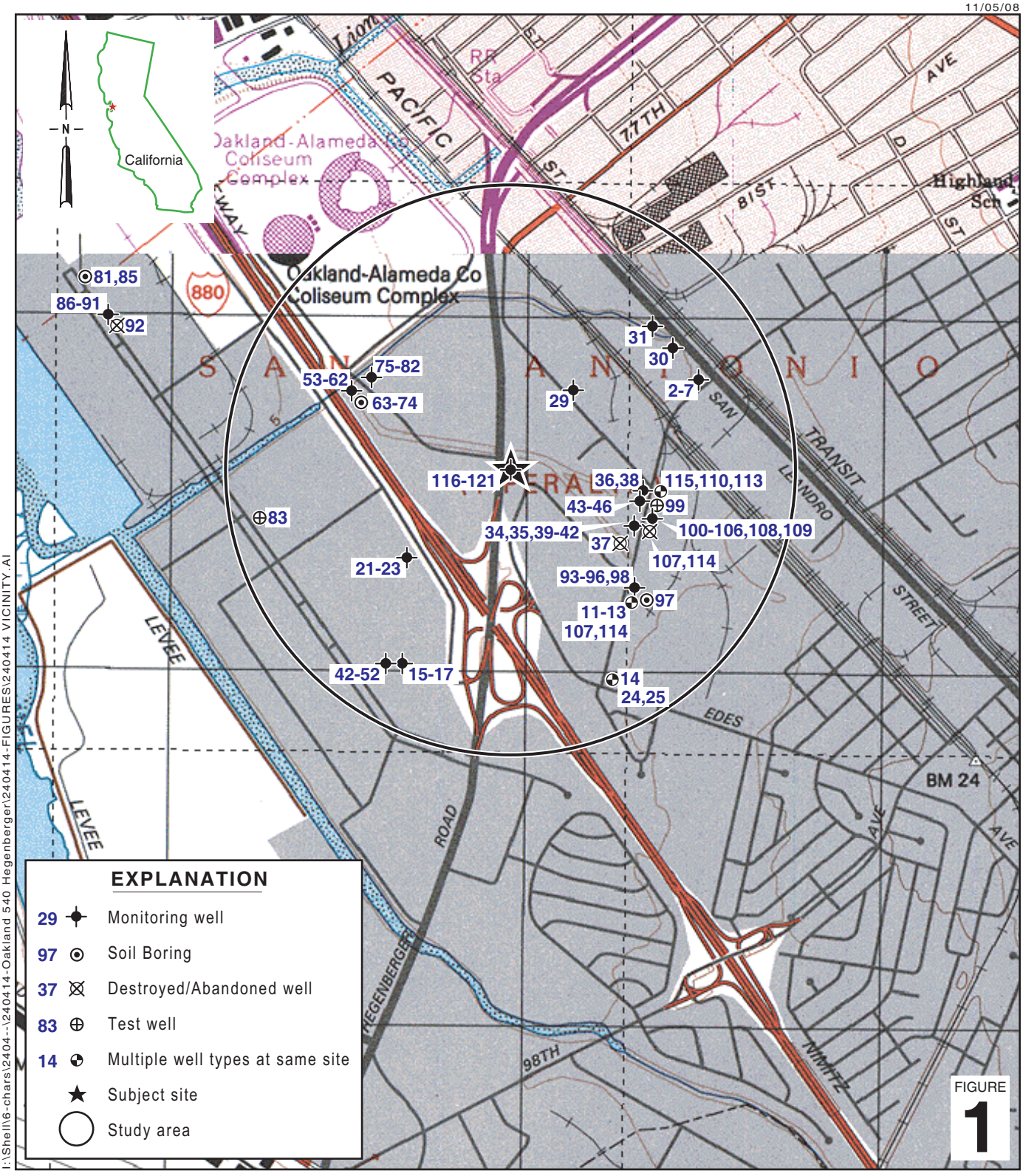
All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG

FIGURES

11/05/08



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0 1/8 1/4 1/2 1

SCALE 1:1/4 MILES

FIGURE 1

Shell-branded Service Station

540 Hegenberger Road

Oakland, California

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Vicinity Map

11/23/2010

Site Plan

EXPLANATION

- SVP-1 — Proposed sub-slab soil vapor probe location (Shell)
- MW-2 — Monitoring well location (Shell)
- BW-A — Tank backfill well location (Shell)
- MW-1 — Groundwater extraction well location (Shell)
- MW-1 — Monitoring well location (ARCO)
- RW-1 — Recovery well location (ARCO)
- MW-2 — Destroyed well location (ARCO)
- D-1-5' — Soil sample location (04/04)
- C-1 — Canal sampling location (2001)
- SB-E — Soil boring location (08/00)
- SB-D — Soil boring location (07/98)
- SB-1 — Soil boring location (03/98)
- D-1 — Soil sample location (01/98)
- D-1 — Soil sample location (08/96)
- INF — GWE system sample location
- Electrical line (E)
- Telecommunication line (T)
- Storm drain line (STM)
- Sanitary sewer line (SAN)
- Water line (W)
- FH — Fire hydrant

HEGENBERGER ROAD

COLISEUM WAY

Canal

C-1

FH

Median

Median

PG&E

Planter

SB-1

Shell Station
540 Hegenberger

SB-5

MW-3

SB-2

P-4-5'

P-5-5'

P-6-5'

D-1

D-4-5'

D-2

D-1

D-5-5'

D-6-5'

Dispensers

BW-D

BW-A

BW-C

USTs

MW-2

SD-2

SB-E

SVP-3

SVP-1

Building

SB-D

SVP-2

SB-4

SB-3

BW-B

Dispensers

D-3-5'

D-2-5'

D-1-5'

D-6

P-3-5'

P-2-5'

P-1-5'

MW-1

SB-F

MW-5

Remediation piping

SS Cleanout

Car Wash

Planter

Remediation Compound

INF

EFF

Storage

Planter

SB-G

Jack in the Box Restaurant

12" SS

EDES AVENUE

MW-4

Days Inn

ENTERPRISE WAY

Laborers' International Union

SD-1

Planter

Driveway

Sidewalk

Driveway

MW-7

Canopy

Dispenser Islands

USTs

Driveway

Former W/O UST

MW-1

MW-3

Sidewalk

AM/PM Mini-Mart

Planter

ARCO Station #4494
566 Hegenberger

MW-2
(Destroyed 12/92)

RW-1

MW-4

Trash

MW-6

MW-5

Burger King Restaurant

N

0 20 40 80

Scale (ft)

FIGURE

2

Shell-branded Service Station
540 Hegenberger Road
Oakland, California

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