CONESTOGA-ROVERS & ASSOCIATES

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Telephone: (510) 420-0700 Fax: (510) 420-9170
www.CRAworld.com

TRANSMITTAL

DATE: June 2, 2011

REFERENCE NO.: 240894

PROJECT NAME: 1800½ Powell Street, Emeryville

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

RECEIVED
9:23 am, Jun 08, 2011
Alameda County
Environmental Health

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☒ Final
- ☐ Other

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- ☐ Mail
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QUANTITY	DESCRIPTION
1	Subsurface Investigation Work Plan

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

COMMENTS:
If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US (electronic copy)

Au Energy LLC, c/o Nick Goyle, Vintners Distributors, Inc., 41805 Albrae Street, 2nd Floor, Fremont, CA 94538

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: **Correspondence File**

Denis L. Brown
Shell Oil Products US
HSE – Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
Email denis.l.brown@shell.com

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94205-6577

Re: Shell-branded Service Station
1800 ½ Powell Street
Emeryville, California
SAP Code 135266
Incident No. 98995349
ACEH Case No. RO0000254

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.

As always, please feel free to contact me directly at (707) 865-0251 with any questions or concerns.

Sincerely,

Denis L. Brown
Senior Program Manager

SUBSURFACE INVESTIGATION WORK PLAN

SHELL-BRANDED SERVICE STATION
1800½ POWELL STREET
EMERYVILLE, CALIFORNIA

SAP CODE	135266
INCIDENT NO.	98995349
AGENCY NO.	RO0000254

Prepared by:
Conestoga-Rovers & Associates

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JUNE 2, 2011
REF. NO. 240894 (4)
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LIST OF APPENDICES

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), as requested in Alameda County Environmental Health's (ACEH's) March 29, 2011 letter.

The subject site is an active Shell-branded Service Station located on the northwest corner of Powell Street and Frontage Road in a primarily commercial area of Emeryville, California (Figure 1). The site layout includes four fuel underground storage tanks, eight fuel dispenser islands, a drive-through car wash, and a station building (Figure 2).

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

2.0 WORK TASKS

2.1 PERMITS

CRA will obtain a drilling permit and a well destruction permit from the Alameda County Public Works Agency.

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 drilling location, and the location will be cleared through Underground Service Alert and a private line locator service prior to drilling.

2.4 SUBSURFACE INVESTIGATION

Historically, well S-9 has contained up to 2.8 feet of separate-phase hydrocarbons which consisted of 18 percent gasoline-range hydrocarbons with the remaining fraction of petroleum hydrocarbons in heavier fractions. Since 1996, the screened interval in well S-9 has apparently been coated with a tar-like substance, which prevented the well from

being used for monitoring. To obtain additional groundwater data from this area, the existing well S-9 will be replaced by well S-9R, which will be located within 5 feet of well S-9 (Figure 2). If CRA is unable to clear a location adjacent to S-9 due to interference of underground utilities or fill materials, we will over-drill S-9 with hollow-stem augers and install S-9R in the boring.

If we are able to clear an adjacent location, a CRA geologist will supervise the drilling and describe encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. After clearing the boring to 5 feet below grade (fbg) with an air- or water-knife, soil samples will be collected continuously to the bottom of the well boring (approximately 20 fbg). Soil samples will be screened in the field for possible chemical analyses and for organic vapors using a photo-ionization detector (PID). Soil sample selection will be based on field observations (including PID readings and soil types). CRA will prepare a boring log for the well, and PID measurements will be recorded on the boring log.

Soil samples designated for chemical analyses will be retained in stainless steel sample tubes or brass sample tubes. The tubes will be covered on both ends with Teflon® sheets and plastic end caps. Soil samples will be labeled, entered onto a chain-of-custody record, and placed into a cooler with ice for transport to a State of California certified laboratory for analyses. CRA will request a standard 2-week turn around time for laboratory results.

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

2.5 MONITORING WELL INSTALLATION

Well boring S-9R will be completed to approximately 20 fbg and will be screened from approximately 5 feet above to 10 feet below first-encountered groundwater. The well will be constructed using 4-inch-diameter Schedule 40 PVC casing, a filter pack that will be placed from the bottom of the well screen up to 1 foot above the top of the well screen, followed by a 1-foot-thick bentonite seal, and cement grout to grade. Actual well construction details will be based on soil types and field conditions encountered during drilling. The well will be secured with a locking cap under a traffic-rated well box.

2.6 MONITORING WELL DESTRUCTION

If S-9 is not over-drilled to install S-9R, CRA proposes to properly destroy the well by backfilling with neat cement under pressure (pressure grouting). The well vault will be removed, and the surface pavement will be patched with concrete to match the surrounding grade. The proposed scope of work will be performed under the supervision of a professional geologist or engineer.

2.7 WELL DEVELOPMENT AND SAMPLING

Upon waiting at least 72 hours after well installation, Blaine Tech Services, Inc. (Blaine) of San Jose, California will develop the new groundwater monitoring wells. At least 72 hours after well development, Blaine will sample the new groundwater monitoring well according to the existing chemical analysis protocol and will gauge the existing wells during the monitoring event.

2.8 CHEMICAL ANALYSES

Soil samples will be analyzed for total petroleum hydrocarbons as diesel (TPHd) by EPA Method 8015B and for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and fuel oxygenates using EPA Method 8260B.

The groundwater samples from well S-9 will be analyzed for TPHd by EPA Method 8015B and for TPHg, BTEX, and fuel oxygenates using EPA Method 8260B. Groundwater samples from the existing wells will be analyzed per the existing protocol and schedule.

2.9 WELLHEAD SURVEY

A licensed surveyor will survey the wellhead elevation relative to mean sea level and the well's latitude and longitude.

2.10 REPORT PREPARATION

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

3.0 SCHEDULE

CRA will begin work upon receiving ACEH's written approval of this work plan and the appropriate drilling and well destruction permits.

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

Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG

FIGURES

01/13/09

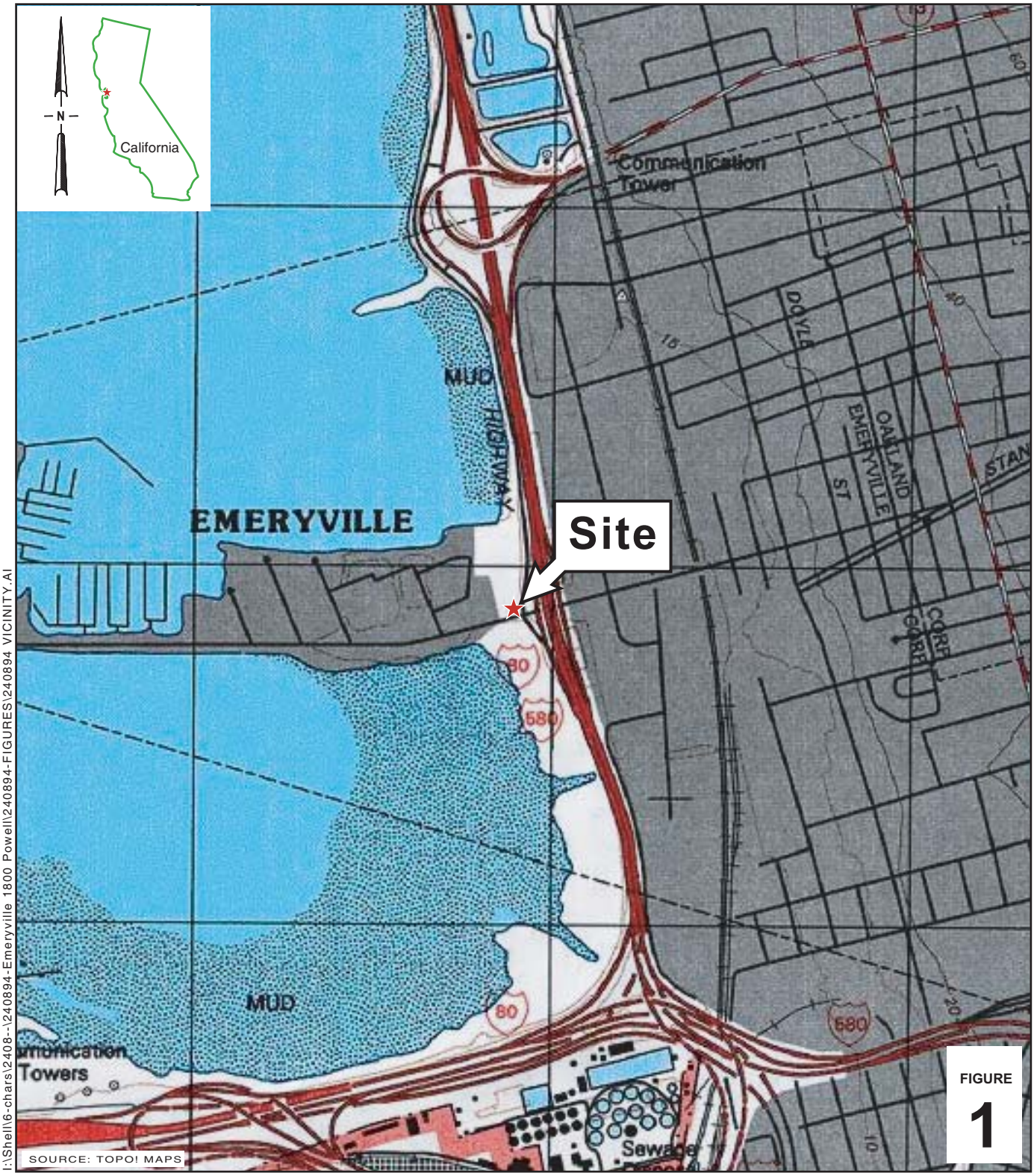

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FIGURE
1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station

1800 1/2 Powell Street

Emeryville, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

05/25/2011

EXPLANATION

- S-9 — Proposed monitoring well re-installation
- S-5 — Monitoring well location
- S-6 — Destroyed monitoring well location
- S-1/A — Tank backfill well location

N

0 15 30 60

Scale (ft)

Holiday Inn
Hotel Building
1800 Powell

Hotel
Parking Lot

Hotel
Parking Lot

Shell Station
1800 1/2 Powell

Car
Wash

Dispenser
Islands

Dispenser
Islands

Dispenser
Islands

Marketeer
Building

Canopy

USTs

Trash

Planter

Planter

Planter

Planter

Planter

Driveway

Driveway

Driveway

Driveway

Traffic Island

S-1/A

S-12

S-2/E

S-11/D

S-3/B

S-4/C

S-10

S-13

S-9

S-8

S-14

S-6

S-7

S-5

FRONTAGE ROAD

POWELL STREET

I:\Shell\6-chars\2408-~\240894-Emeryville 1800 Powell\240894-FIGURES\240894 SITE PLAN.DWG

Site Plan

CONESTOGA-ROVERS & ASSOCIATES

Shell-branded Service Station

1800 1/2 Powell Street
Emeryville, California

FIGURE

2

APPENDIX A

SITE HISTORY

SITE HISTORY

Previous Land Use: The site was at one time a city dump and is built on fill. Filling began in 1884 on land owned by Paraffine Company and was terminated in 1969. Based on available log data, the fill material at the Shell-branded Service Station site extends to an approximate depth of at least 12 to 15 feet below grade (fbg) and appears to be continuous across the site. The fill materials reportedly include industrial refuse, rip-rap, concrete blocks, and imported clayey and sandy soil. Products manufactured by Paraffine included linoleum and other hard floor coverings, roofing and building materials, paints, varnishes, lacquers, and enamels. Paraffine's facilities included aboveground storage tanks that were removed when they closed the facility in the 1960s.

1982 Release: In September 1982, a leak from damaged fiberglass piping occurred while installing new dispensers in the area where well S-9 is now located. The release was reported as approximately 3,200 gallons of super unleaded gasoline. Shell Oil Products US (Shell) submitted an Unauthorized Release Report (URR) on September 10, 1982.

1982 Well Installations: Four tank backfill wells (S-1 through S-4) and three groundwater monitoring wells (S-5 through S-7) were installed at the site prior to September 10, 1982. No boring logs or well construction details are available for these wells.

1983 Well Installations: In August 1983, Gettler-Ryan, Inc. (G-R) installed three monitoring wells (S-8 through S-10) along Powell Street. GeoStrategies, Inc.'s (GeoStrategies') August 22, 1989 *Work Plan* states that well tank backfill well S-11 was installed prior to August 1983; however, well S-11 doesn't appear in available gauging records from September 1983 through May 1984. GeoStrategies' work plan provides the first available record of S-11. No boring logs or well construction details are available for these wells.

1983 Mobile Groundwater Extraction (GWE): From September through November 1983, G-R conducted 18 mobile GWE events from wells S-4, S-9, and S-10. Approximately 25,246 gallons of groundwater were extracted during these events.

1984 Separate Phase Hydrocarbon (SPH) Pumping: In May 1984, G-R conducted eight SPH pumping events from well S-9, which removed approximately 7 gallons of SPHs. G-R's January 20, 1986 letter estimated that 400 gallons of SPHs had been recovered, possibly by both mobile GWE and SPH pumping and likely including additional events with no available documentation.

1989 Subsurface Investigation: In November 1989, G-R installed three groundwater monitoring wells (S-12 through S-14) and destroyed two groundwater monitoring wells (S-6 and S-7). Soil samples from the well borings contained up to 11,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as oil, 3,300 mg/kg total petroleum hydrocarbons as diesel (TPHd), 9,100 mg/kg total petroleum hydrocarbons as gasoline (TPHg), 480 mg/kg benzene, 200 mg/kg toluene, 230 mg/kg ethylbenzene, and 900 mg/kg xylenes. GeoStrategies' February 2, 1990 *Quarterly Report October - December 1989* describes the well installations and destructions.

1990 Receptor Survey: GeoStrategies' November 2, 1990 *Site Update* identified the mud flats of the Emery Crescent Marsh located approximately 500 feet south of the site. No water-producing wells were identified within one-half mile of the site.

1994 Soil Disposal: In September 1994, approximately 10 cubic yards of hydrocarbon-impacted soil was excavated for off-site disposal during sign installation activities.

1995 SPH Fingerprinting: In November 1995, Weiss Associates (Weiss) collected an SPH sample which was analyzed by Shell's laboratory and determined to contain approximately 50 percent (%) gasoline and 50% C_{20} to C_{50} hydrocarbons, possibly roofing tar. Weiss's August 14, 1996 *Subsurface Investigation Report* presents the fingerprinting results.

1996 Subsurface Investigation: On May 20, 1996, Weiss drilled six off-site soil borings (B-1 through B-6) to determine if soil or groundwater down gradient of the site had been impacted by petroleum hydrocarbons. Boring depths ranged from 7 to 16 fbg. Soil samples from the borings contained up to 1,500 mg/kg total recoverable petroleum hydrocarbons (TRPH), 870 mg/kg TPHd, 43 mg/kg TPHg, 0.072 mg/kg ethylbenzene, and 0.19 mg/kg xylenes. No organochlorine pesticides, polychlorinated biphenyls, semi-volatile organic compounds, or volatile organic compounds (VOCs) were detected in the soil samples. No TPHg, VOCs, or methyl tertiary-butyl ether (MTBE) were detected in grab groundwater samples collected during this investigation. Weiss's August 14, 1996 *Subsurface Investigation Report* details the investigation.

1998 Dispenser Upgrades: In March 1998, Paradiso Mechanical added secondary containment to existing dispensers and turbine pumps. Cambria Environmental Technology, Inc. (Cambria) collected soil samples from beneath two dispensers where field indications of hydrocarbons were observed. The dispenser soil samples contained up to 250 mg/kg TPHd, 260 mg/kg TPHg, 0.26 mg/kg benzene, 1.0 mg/kg toluene,

2.6 mg/kg ethylbenzene, 14 mg/kg xylenes, and 0.13 mg/kg MTBE. Cambria's May 4, 1998 *Dispenser Soil Sampling Report* presents investigation details.

2004 Receptor Survey: In March 2004, Cambria conducted a survey of California Department of water resources records which did not identify any waster-producing wells within one-half mile of the site. The mud flats of the Emery Crescent Marsh located approximately 390 feet south of the site and Temescal Creek located one-quarter of a mile south of the site were identified as potential environmental receptors. Toxichem Management Systems, Inc.'s (Toxichem's) February 2, 2005 *Product Dispenser Sampling Report* provides survey details.

2004 Upgrade Activities: In September and October 2004, G-R upgraded the dispensers and repaired a product line. Toxichem collected nine soil samples from beneath the dispensers (MPD-1 through MPD-9) and two soil samples from beneath the repaired piping (MPD-10 at 4.3 and 4.6 fbg). The soil samples contained up to 3,500 3.mg/kg TPHd, 7,900 mg/kg TPHg, 0.031 mg/kg benzene, 53 mg/kg toluene, 26 mg/kg ethylbenzene, 630 mg/kg xylenes, 0.64 mg/kg MTBE, and 150 mg/kg lead. The laboratory noted that the TPHd detections did not match their diesel standard. Based on these sampling results, Shell submitted a URR on October 15, 2004. Toxichem's February 2, 2005 *Product Dispenser Sampling Report* describes the investigation results.

2005 SPH Analysis: Shell and Triton Analytics Corporation analyzed an SPH sample and determined it contained approximately 18% by weight gasoline, little material from C_{13} to C_{18}, 45% by weight in the vacuum gas oil range (carbon range higher than diesel; i.e., pitch or asphalt), and 35% by weight vacuum residue range (heavy fraction hydrocarbons up to C_{110}). Toxichem's February 2, 2005 *Product Dispenser Sampling Report* describes the SPH analysis results.

2006 Site Conceptual Model (SCM): In January 2006, Cambria submitted an SCM, which proposed an additional subsurface investigation to delineate groundwater impacts down gradient of the site and delineate the extent of soil impacts on site.

2006 Carwash Sump Sampling: In March 2006, Cambria collected a grab water sample from the second stage of the six-stage carwash clarifier sump. Evergreen Oil, Inc. then pumped out the clarifier sump, and Cambria noted continuous cracks in the first and second units of the clarifier sump. The grab water sample from the clarifier sump contained 14,000 micrograms per liter (µg/l) oil and grease, 5,300 µg/l motor oil range organics (C_{24}-C_{36}), 30,000 µg/l hydraulic oil range organics (C_9-C_{36}), 10,000 µg/l TPHd, 0.55 µg/l toluene, and 3.5 µg/l xylenes. Based on these results, Shell submitted a URR on March 13, 2006.

2006 Subsurface Investigation: In April 2006, Cambria drilled six soil borings to investigate the extent of soil and groundwater impacts on site. Soil samples from the borings contained up to 6,060 mg/kg TPHd, 502 mg/kg TPHg, 0.0987 mg/kg benzene, 0.0160 mg/kg toluene, 0.123 mg/kg ethylbenzene, 0.328 mg/kg xylenes, and 0.0396 mg/kg MTBE. Grab groundwater samples from the borings contained up to 66,000 µg/l TPHd, 13,500 µg/l TPHg, 35.5 µg/l benzene, 10.2 µg/l toluene, 3.67 µg/l ethylbenzene, 18.9 µg/l xylenes, and 72.7 µg/l MTBE. Cambria's June 12, 2006 *Subsurface Investigation Report* provides details of this investigation.

Groundwater Monitoring Program: Groundwater has been monitored at the site since October 1984. Groundwater depth at the site has historically ranged from approximately 6.0 to 10.8 fbg. Historically, well S-9 has contained up to 2.8 feet of SPHs. Since 1996, the screened interval in well S-9 has apparently been coated with a tar-like substance which prevented the well from being used for monitoring.