CAMBRIA

February 24, 1999

Juliet Shin
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Letter Response and Work Plan**
Shell-branded Service Station
1285 Bancroft Avenue
San Leandro, California
Incident # 98996067
Cambria Project #24-314-498

Dear Ms. Shin:

Cambria Environmental Technology (Cambria), on behalf of Equilon Enterprises LLC (Equilon), has prepared this response to the Alameda County Health Care Services Agency (ACHCSA) letter dated December 30, 1998. Following is a discussion of specific issues raised in the letter and our proposed scope of work for additional off-site investigation.

1) Delineate the extent of the observed groundwater contaminate plume: To delineate the extent of petroleum hydrocarbon and MTBE distribution in ground water, Cambria proposes to install two ground water monitoring wells (MW-5 and MW-6). The proposed monitoring wells will be installed off site and down gradient of the Shell site (Figure 1). Based on the analytical ground water results from MW-5 and MW-6, Cambria proposes the installation of a monitoring well in the City of San Leandro Memorial Park (MW-7) as a contingency plan to further define hydrocarbon distribution down gradient. Proposed well MW-7 will only be installed if petroleum hydrocarbons and MTBE are not delineated by installation of proposed wells MW-5 and MW-6. Following is Cambria's scope of work for the installation of the proposed monitoring wells.

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will have the utilities in the site vicinity identified.

Site Health and Safety Plan: We will prepare a comprehensive site safety plan to protect site workers. The plan will be kept onsite during field activities and signed by each site worker.

Permits: We will obtain necessary permits and right of entry agreement for installation of three off-site monitoring wells.

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Well Installation: Using a hollow-stem auger rig, Cambria will advance borings for the installation of ground water monitoring wells MW-5, MW-6 and MW-7. Our standard field procedures are presented as Attachment A. During field activities, we will collect soil samples at five foot intervals and from just above the water table. We will select soil samples for chemical analysis based on observations of staining and odor or on the results of field screening with a volatile vapor analyzer. Following soil sample collection, we will install a two-inch diameter PVC well, screened from approximately 20-60 ft bgs.

Well Development and Top of Casing Survey: Blaine Tech Services, Inc. of San Jose, California will develop and sample the monitoring wells. Virgil Chavez Land Surveying of Vallejo, California will survey the top of casing elevation to mean sea level.

Laboratory Analyses: Selected soil samples and ground water samples will be analyzed for:

- TPHg by EPA Method 8015
- BTEX and MTBE by EPA Method 8020. The highest MTBE detected will be confirmed by EPA Method 8260.

Monitoring Well Installation Report: After the analytical results are received, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history
- Descriptions of the drilling and soil sampling
- Boring logs
- Tabulated analytical results
- A figure presenting well locations
- Analytical reports and chain-of-custody forms
- A discussion of the hydrocarbon distribution.

2) Efforts must be made to determine whether the plume is impacting the San Leandro Creek or the nearby domestic/irrigation wells: The monitoring well installations proposed above will provide ground water data in the down gradient direction between the Shell-branded service station and San Leandro Creek.

A well survey was previously performed to identify existing wells (sensitive receptors) and previously existing wells within a 1/2-mile radius from the site. Records from the California Department of Water Resources (DWR) were reviewed. Following is a summary of sensitive

receptors in the vicinity of the site.

Monitoring Wells: Approximately 14 wells, in addition to Shell owned wells, are located within a 1/2-mile radius of the site. The subject wells were noted as either monitoring, test well, cathodic protection, other or unknown on records from the DWR. Well locations within a 1/2-mile of the site are mapped on Figure 2 and summarized in Table 1.

Water Producing Wells: Approximately 29 wells, identified as either domestic, irrigation, or industrial on records from the DWR, were located within a 1/2-mile radius of the site. Two of the 29 wells were identified as being located down gradient of the subject site: one irrigation well owned by the City of San Leandro, identified as well 25M on Figure 2, and one domestic well installed in 1937 owned by Mr. Charles Hale and identified as 25L1 on Figure 2.

According to a phone conversation with John Camp, Environmental Compliance Inspector with the City of San Leandro Water Pollution Control Monitoring Department, the irrigation well (25M) was abandoned and sealed at least 10 years ago. According to Mr. Camp, the nearby San Leandro City Memorial Park utilizes City-supplied water for irrigation purposes.

Cambria placed calls to the City of San Leandro and Alameda County to determine if the domestic well (25L1) is currently being used as a private water supply. As of this report, we have not determined the current use of the subject domestic well. However, proposed monitoring well MW-6 will serve to delineate hydrocarbon and MTBE distribution in the direction of the domestic well and will serve as sentinel well between the source and the domestic well.

Surface Water Bodies: San Leandro Creek is located approximately 550 feet northwest of the site, (Figure 1).

Data from the proposed monitoring wells will determine whether the ground water plume is delineated between the source areas and sensitive receptors. Well locations within a 1/2-mile of the site are mapped on Figure 2 and summarized in Table 1.

3) The four monitoring wells onsite appear to be inadequately screened: The December 30, 1998 ACHCSA letter states "there is concern that the highest contaminant concentrations, which generally lie at the top of the water table, are not being detected from these (onsite) wells." Depth to water currently ranges from approximately 31 to 33 feet below grade. Wells MW-1 through MW-4 have top of screen depths ranging from 35 to 40 feet below grade. Therefore, well screen intervals are currently submerged. Although wells MW-1 through MW-4 may yield ground water data which is

not entirely representative of conditions, these are source area wells and not wells which serve to define the extent of down gradient impact to ground water. Concentrations of petroleum hydrocarbons and MTBE in proposed off site monitoring wells MW-5, MW-6 and MW-7 will be critical in defining the distribution of petroleum hydrocarbons and MTBE in ground water. The proposed monitoring wells will be screened in accordance with current ground water conditions. If is determined that source area remediation or modeling based on source area conditions is warranted, well reconstruction and/or collection of additional onsite ground water data may be proposed.

*4) **Ground Water Sample Analysis:*** In the December 30, 1998 ACHCSA letter, additional ground water analysis and sample frequency was requested. The following chemical analysis and frequency will be implemented in the first quarter of 1999:

- Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015/8020, all wells quarterly;
- Benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8015/8020, all wells quarterly;
- Methyl tert-butyl ether (MTBE) by EPA Method 8015/8020 and confirmed with EPA Method 8260, all wells one time event. Subsequent sampling events by EPA Method 8015/8020 with the highest MTBE concentration confirmed by EPA Method 8260;
- Tertiary butyl ether (TBA), tertiary amyl methyl ether (TAME), diisopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE) by EPA Method 8260, all wells one time only in first quarter, 1999;
- ethylene dibromide (EDB) and ethylene dichloride (EDC) by EPA Method 8010, all wells one time only in first quarter 1999.

In the December 30, 1998 ACHCSA letter, analysis of tetrachloroethylene (PCE) was requested for all wells on a semi-annual basis. We don't believe this analysis is warranted at this time as PCE in ground water does not appear to be a result of PCE in soil beneath the subject site. The highest concentration of PCE in unsaturated zone soil samples was 0.002 milligrams per kilogram (mg/kg) from boring BH-A (MW-1) in 1990 at 9.2 ft bgs. This concentration of PCE was equal to the detection limit of 0.002 mg/kg. For the same soil sampling event, PCE was not detected in soil samples from BH-A at depths of 19.7, 29.7 and 39.7 ft bgs, however low levels of PCE were detected in the capillary fringe soil samples from BH-A. The historical concentrations of PCE in ground water samples from MW-1 (BH-A) are greater than concentrations detected in the capillary fringe soil samples from the same borehole indicating the source of PCE in soil beneath the site is

more likely a result of PCE in ground water in the vicinity.

According to conversations with Al Wagner with the Department of Toxic Substances Control (DTSC), the subject Shell site is not part of the regional volatile organic compound (VOV) plume that the DTSC is currently focusing on in the region. However, soil data from Shell site borings suggest the Shell-branded service station is not a source for VOC contamination in ground water. At the direction of the ACHCSA, Cambria will coordinate site access to allow the City of San Leandro and the DTSC to monitor site wells for VOC concentrations.

Schedule: Following written approval of this work plan, Cambria will begin permitting and pre-field activities for the installation of the proposed monitoring wells.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Darryk Ataide at (510) 420-3339 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Darryk Ataide
Environmental Scientist

Diane M. Lundquist, P.E.
Principal Engineer

Attachment : A - Standard Operating Procedures For Monitoring Well Installations

cc: Karen Petryna, Equiva Services LLC, P.O. Box 6249 Carson, California 90749

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02/08/99

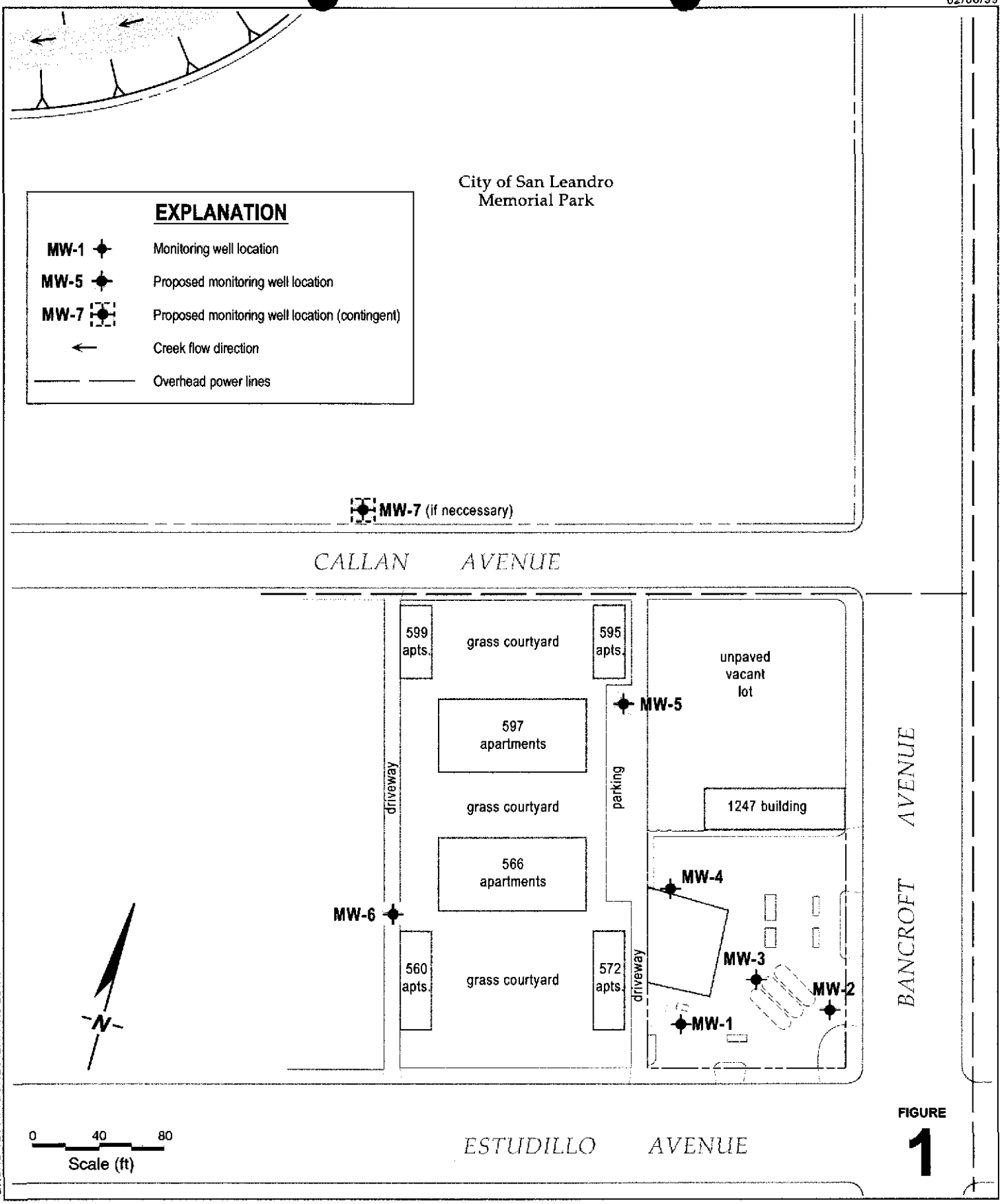

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FIGURE
1

Shell-branded Service Station
1285 Bancroft Avenue
San Leandro, California
Incident # 98996067

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Proposed Monitoring Well Locations

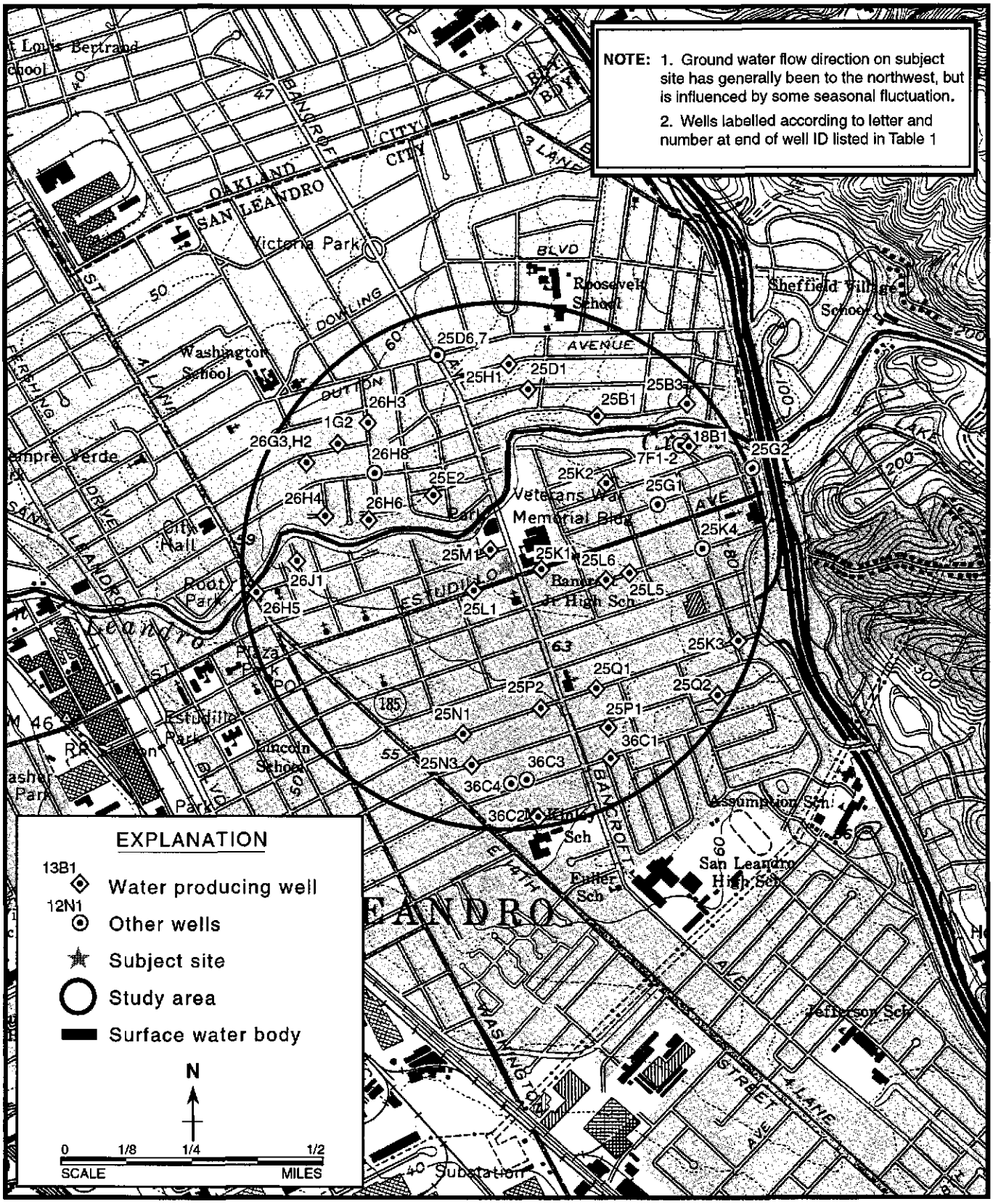

Figure 2 . Well Locations - Shell Service Station WIC #204-6852-0703, 1285 Bancroft Avenue, San Leandro, California

Table 1. Well Survey - Shell Service Station - WIC# 204-6852-0703, 1285 Bancroft, San Leandro, California

Well ID	Notes	Installation Date	Owner	Use	Depth (feet)
2S/3W-25M2	1	March-90	Shell Oil Company	MON	60
2S/3W-25B3	2	February-91	Brad Jones	DOM	145
2S/3W-25K4	2	March-91	M. Sturbeuant & T. McCormick	MON	30
2S/3W-25B1	2	May-77	Arthur Lund	IRR	72
2S/3W-25D1	2	August-77	Bob Eversole	IRR	55
2S/3W-25D6	2	May-88	Chevron	MON	50
2S/3W-25D7	2	May-88	Chevron	MON	50
2S/3W-25D8	3	September-88	Unocal	MON	48
2S/3W-25E2	2	September-77	J. A. Thompson	IRR	60
2S/3W-25G1	2	UNK	EBMUD	CAT	61
2S/3W-25G2	2	June-81	EBMUD	CAT	65
2S/3W-25H1	2	April-46	Charles Davis	DOM	78
2S/3W-25K1	2	September-33	A.W.Scalasy	DOM	93
2S/3W-25K2	2	1949	A. Young	IRR	102
2S/3W-25K3	2	January-47	Funucchi	DOM	76
2S/3W-25L1	2	September-37	Charles Hale	DOM	88
2S/3W-25L5	2	September-77	Emil Sereda	IRR	82
2S/3W-25L6	2	September-77	James Meyer	IRR	83
2S/3W-25M1	2	August-41	City of San Leandro	IRR	93
2S/3W-25N1	2	June-77	Tony Yalek	IRR	57
2S/3W-25N3	2	September-88	Luke & Olive Deasy	IRR	65
2S/3W-25P1	2	April-77	George Bradley Land	IRR	51
2S/3W-25P2	2	UNK	Alan Quadros	DOM	UNK
2S/3W-25Q1	2	1949	Sal Tulions	IRR	81
2S/3W-25Q2	2	September-77	Edmond Saustina	IRR	83
2S/3W-26G3	2	UNK	Dennis Omick	IRR	UNK
2S/3W-26H2	2	April-77	Dennis Omick	IRR	54
2S/3W-26H3	2	July-77	Tom Saedden	IRR	57
2S/3W-26H4	2	August-77	Dacis Hemricksen	IRR	60
2S/3W-26H5	2	UNK	UNK	IRR	54
2S/3W-26H6	2	June-77	Stuart Work	IRR	60
2S/3W-26J1	2	1949	Mr. Lopez	IND	130
2S/3W-36C1	2	1957	M. J. Crosby	IRR	62
2S/3W-36C2	2	UNK	Fran P. Tabler	IRR	58
2S/3W-36C3	2	UNK	Donald Walter	UNK	UNK
2S/3W-36C4	2	UNK	Steve Campouris	UNK	UNK
3S/1W-7F1	2	November-55	N. Bufardeci	TES	112

Table 1. Well Survey - Shell Service Station - WIC# 204-6852-0703, 1285 Bancroft, San Leandro, California

Well ID	Notes	Installation Date	Owner	Use	Depth (feet)
3S/1W-7F2	2	November-55	N. Bufardeci	TES	65
3S/1W-18B1	2	July-54	N. Bufardeci	DOM	260
4S/2W-1G2	2	October-50	W. Becker	IRR	571
2S/3W-25D9	3	UNK	Unocal	UNK	UNK
2S/3W-25D10	3	UNK	Unocal	UNK	UNK
2S/3W-25M3	1	February-92	Shell Oil Company	MON	60
2S/3W-25M4	1	February-92	Shell Oil Company	MON	59
2S/3W-26H8	2	December-91	Pacific Gas and Electric	OTH	117

Abbreviations:

MON = Monitoring well

DOM = Domestic well

IRR = Irrigation well

IND = Industrial well

CAT = Cathodic protection well

TES = Test well or test boring

UNK = Unknown

OTH = Other

Notes:

1 = Not shown on Figure 1, well located on subject site

2 = Wells labelled on Figure 1 by letter and numbers after hyphen in Well ID

3 = Not shown on Figure 1, well located outside of study area

ATTACHMENT A

Standard Operating Procedures For Monitoring Well Installations

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STANDARD FIELD PROCEDURES FOR MONITORING WELL INSTALLATION

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4° C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Ground water monitoring wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

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ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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ENVIRONMENTAL PROTECTION (LOP)
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(510) 567-6700
FAX (510) 337-9335

March 15, 1999

Darryk Ataide
Cambria Environmental Technology, Inc.
1144 65th Street, Ste B
Oakland, CA 94608

STID: 988
Re: Fourth Quarter 1998 Monitoring Report for Shell-Branded Service Station, located at 1285 Bancroft Avenue, San Leandro, California

Dear Mr. Ataide,

This office has reviewed Cambria Environmental Technology, Inc.'s Fourth Quarter 1998 Monitoring Report. The report states that the Oxygen-Releasing Compounds (ORCs) were removed from the on-site wells in response to the County's December 10, 1998 letter, which states that the actual concentrations in the plume were uncertain since groundwater samples were being collected from wells with ORCs in them which may exhibit a localized lower concentration. Although the County does generally discourage the placement of ORCs in pivotal monitoring wells, the County is not discouraging the use of ORCs to assist in remediating the plume or act as a oxygen blanket for plume containment. The County was merely reinforcing the need for plume delineation. If it is felt that ORCs can be an effective tool for plume degradation, it is recommended that ORCs be placed in non-critical monitoring points or a strategic, mutually agreed upon sampling scheme.

If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

Cc: Karen Petryna
Equiva Services LLC
Science & Engineering, West Coast
P.O. Box 6249
Carson, CA 90749-6249