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August 15, 2014

Mr. Mark Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Dear Mr. Detterman:

Attached for your review is the *Response to Technical Comments and Data Gap Work Plan Addendum* for former Chevron-branded service station 91723, located at 9757 San Leandro Street in Oakland, California. This document was prepared by Stantec Consulting Services Inc. (Stantec), upon whose assistance and advice I have relied. I declare under penalty of perjury that the information and/or recommendations contained in the attached report are true and correct, to the best of my knowledge.

If you have any further questions, please do not hesitate to contact me or the Stantec project manager, Travis Flora, at (408) 356-6124 ext. 238, or travis.flora@stantec.com.

Sincerely,

Carryl MacLeod

Carryl MacLeod
Project Manager

Stantec Consulting Services Inc.
15575 Los Gatos Boulevard, Building C, Los Gatos CA 95032-2569

August 15, 2014

Attention: **Mr. Mark Detterman**
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Reference: **Response to Technical Comments and Data Gap Work Plan Addendum**
Former Chevron-Branded Service Station 91723
9757 San Leandro Street, Oakland, CA

Dear Mr. Detterman,

On March 31, 2014, Stantec Consulting Services Inc. (Stantec), on behalf of Chevron Environmental Management Company (Chevron), submitted the Site Conceptual Model and Data Gap Work Plan (SCM) for former Chevron-branded Service Station 91723, which was located at 9757 San Leandro Street, Oakland, Alameda County, California (the Site; shown on **Figure 1**). In response, Alameda County Environmental Health (ACEH) provided technical comments in a letter dated May 29, 2014 (**Attachment A**) and requested a Data Gap Work Plan Addendum be submitted by August 15, 2014. The following sections include Responses to Technical Comments and Data Gap Work Plan Addendum.

RESPONSES TO TECHNICAL COMMENTS

Stantec has reviewed ACEH's technical comments and has the following responses. The subjects of ACEH's technical comments are provided in bold, with Stantec's responses in italics.

1. **LTCP General Criteria b (Unauthorized Release Consists Only of Petroleum)**

   Per the Low-Threat Underground Storage Tank (UST) Case Closure Policy (LTCP), only benzene, ethylbenzene, naphthalene, and polynuclear aromatic hydrocarbons (PAHs) are required to be analyzed in soil at sites where waste oil releases are documented. There is currently no evidence of a waste oil release at the Site. In April 1996, soil samples were collected from borings SB-3(1996) and SB-4(1996) at 10 feet below ground surface (bgs) in the immediate area of the former waste oil UST and were analyzed for total oil and grease (TOG). Concentrations of TOG in these samples were below the current shallow soil California Regional Water Quality Control Board – San Francisco Bay Region Environmental

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Former Chevron-Branded Service Station 91723
9757 San Leandro Street, Oakland, CA

Screening Level (ESL) for TOG of 2,500 milligrams per kilogram (mg/kg). PAHs were not analyzed in these samples; however, because TOG was not detected above ESLs, it is likely that PAHs, if present, are below ESLs as well. PAHs are also not included in LTCP direct contact and outdoor air criteria in the interval from 5 to 10 feet bgs. Soil data from borings SB-3 and SB-4 meet the LTCP direct contact and outdoor air criteria for soil at a commercial/industrial site in the interval from 5 to 10 feet bgs.

Soil samples were not collected from borings SB-3 and SB-4 in the interval from 0 to 5 feet bgs due to low photoionization detector (PID) readings (1 and 39 parts per million [ppm], respectively). Based on these data, in the March 31, 2014 SCM, Stantec stated that no further assessment with respect to the potential waste oil release is warranted; however, to address ACEH concerns, Stantec proposes one soil boring to be advanced adjacent to but not within the former waste oil UST pit with a soil sample collected within the interval of 0 to 5 feet bgs to evaluate whether soil conditions in that interval meet LTCP direct contact and outdoor air criteria. Additional details regarding the proposed scope of work are provided in the work plan addendum section, and the location is shown on ***Figure 1****.*

In response to ACEH comments regarding chlorinated hydrocarbons (HVOCs), as stated in the March 31, 2014 SCM, monitoring well MW-1 was installed to investigate the outdoor chemical storage area located on the east side of the cold storage building associated with the former food processing plant to the northwest of the Site, and well MW-7 was installed to investigate the area of the former Shell-branded service station, located immediately adjacent and northwest of the Site. Because these wells were installed to investigate potential off-sources not associated with the former Chevron-branded service station, the detections of 1,1-DCE, 1,1-DCA, 1,2-DCA, and TCA are unlikely associated with the unauthorized release at the Site. Furthermore, HVOCs were analyzed in current Site wells MW-2, MW-5, MW-6, MW-8, and MW-9 from 1987 through 1989, and all concentrations were below laboratory reporting limits (LRLs) with the exception of 1,1-DCE in well MW-9 during Third Quarter 1989, which was detected at 3 micrograms per liter (µg/L). This is below the current ESL for 1,1-DCE of 6 µg/L. HVOCs are not believed to be associated with the former release associated with the Site, and are not considered a data gap. Further assessment of HVOCs is not warranted.

2. General Criteria f – Secondary Source Has Been Removed to the Extent Practicable

As described in the March 31, 2014 SCM, Site conditions meet LTCP groundwater criteria. Dissolved-phase petroleum hydrocarbon concentrations associated with the Site are generally decreasing or stable, indicating that there is no longer a petroleum hydrocarbon source propagating on or off Site that would warrant additional investigation or active remediation. Site conditions also meet LTCP direct contact and outdoor air exposure criteria, which further supports that active remediation is not warranted.

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Due to the age of the former station, there are no known UST removal records; however, there is no evidence to suspect that any abandoned UST system equipment remains on Site. Historical reports indicate that UST system equipment has been removed. In the event a Site management plan is required, the plan will include contingencies to manage any abandoned UST system equipment found on Site. At this time, there are no known plans to redevelop the property or change use. Any assessment needed to design or implement a Site management plan can be conducted at the time it becomes necessary and will be dependent on specific development needs and potentially affected areas.

3. LTCP Media Specific Criteria for Groundwater

a. Length of Groundwater Plume

The request for additional total petroleum hydrocarbons as diesel range organics (TPH-DRO) analysis based on the benzene to total xylenes ratio in historical soil and groundwater samples is not warranted. There is no record of diesel being dispensed on Site. Furthermore, TPH-DRO was analyzed in the sample collected from soil boring DH-8 at 10 feet bgs and it was not detected above the LRL. In this same sample, total petroleum hydrocarbons as gasoline range organics (TPH-GRO) was detected at a concentration of 1,017 mg/kg, and benzene and total xylenes were detected at concentrations of 1.063 mg/kg and 108.092 mg/kg, respectively. According to the State Water Resources Control Board's (SWRCB's) Leaking Underground Fuel Tank Guidance Manual, dated September 2012, the percent of benzene and total xylenes in fresh gasoline is 2% and 9%, respectively (4.5 times more total xylenes than benzene), and 0.03% and 0.5% in fresh diesel (16.7 times more total xylenes than benzene). Due to the low to non-detect concentrations of petroleum hydrocarbons in current groundwater data, Stantec reviewed historical groundwater data for well MW-8, which currently exhibits the highest petroleum hydrocarbon concentrations at the Site. In well MW-8, total xylenes concentrations were only higher than benzene concentrations in 1994. During that time, the ratio of benzene to total xylenes is closer to a gasoline formulation rather than a diesel formulation. The extent of the dissolved-phase petroleum hydrocarbon plume is representative of current groundwater conditions and additional TPH-DRO analysis is not warranted.

b. Extent of Soil Contamination

As stated in the March 31, 2014 SCM, Stantec believes the lateral extent of petroleum hydrocarbons is confined to the Site in the area of the second-generation USTs and fuel dispenser islands. Concentrations of TPH-GRO and/or benzene, toluene, ethylbenzene, and total xylenes (BTEX compounds) were observed above soil ESLs in vadose zone soil in borings SB-5(1996), SB-7 through SB-10, SB-14, and SB-16 and borehole VP-3. These impacts are laterally delineated by concentrations below soil ESLs in vadose zone

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samples collected from boreholes MW-8 and VP-2 to the northwest, borings SB-11 and SB-12 to the northeast, borings SB-2(1989), SB-15, and SB-21 and boreholes MW-5, VP-4, and VP-5 to the southeast, and boring SB-1(1989) and boreholes MW-6 and VP-1 to the southwest. In addition, soil data around the perimeter of the Site meet LTCP direct contact and outdoor air criteria.

The majority of soil samples listed in the ACEH technical comment where TPH-GRO concentrations were greater than 100 mg/kg were collected at a depth within the current saturated zone. The depth of the current saturated zone is based on depth-to-groundwater readings from on-site wells MW-5, MW-6, and MW-8 from Third Quarter 2011 to Third Quarter 2013 (ranging from 7.92 to 10.34 feet below top of casing). Any samples collected deeper on Site, would be in the saturated zone and would likely be more indicative of groundwater conditions than actual soil conditions. No soil ESLs were exceeded in any sample collected off Site.

The lateral extent of petroleum hydrocarbons in soil is considered defined.

c. Preferential Pathways

The groundwater plume is defined on Site, it is decreasing in size and concentration, and it is limited to the areas of wells MW-5 and MW-8. There is no evidence of any off-site source contributing to the contamination, and there is no reason to suspect any preferential pathways are affecting the plume. A utility survey is not warranted for this Site.

d. Distance to Existing Water Supply Well

As requested, a map and table showing all water supply well locations within a 0.25-mile radius of the Site are attached to this letter, along with pertinent, non-confidential details on those water supply wells. Due to the large volume of data that must be sorted through in order to include all well types that have the potential to act as vertical conduits, information regarding the additional wells is not included in ***Table 1*** *or shown on* ***Figure 2*** *but will be included in the subsequent investigation report.*

4. LTCP Media Specific Criteria for Intrusion to Indoor Air

As requested by ACEH, Stantec will collect collocated soil vapor samples in sorbent tubes to be analyzed using United States Environmental Protection Agency (US EPA) Method TO-17 methodologies with naphthalene as the sole analyte to compare concentrations of naphthalene analyzed by US EPA Method TO-17 to the concentrations of naphthalene analyzed by US EPA Method TO-15.

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Prior to sample collection, each soil vapor probe will be field-screened using a PID. This information will be used to evaluate the possible range of concentrations, including sample duration and volume adjustments to avoid sorbent tube breakthrough, and to alert the laboratory of possible concentrations which may cause detector saturation.

Prior to sample collection, the Swagelok® nut, cap, and ferrule are removed from the outlet side of the sorbent tube, and the sorbent tubes are inserted into the tube holder on the sample pump. Two sorbent tubes will be assembled in line in order to assess if there is any breakthrough of naphthalene during sample collection. A "set up tube" will be used to calibrate the desired flow rate for sampling (e.g., 50 milliliters per minute [mL/min]).

Samples will be collected by inserting the sorbent tubes in the holders, then attaching and starting the pump. When the desired sample volume is collected (i.e., one-liter [1,000 cubic centimeters]), the sorbent tube will be removed and capped.

Based on Department of Toxic Substances Control (DTSC) guidance, only 5% to 10% of soil vapor sample locations analyzed by US EPA Method TO-15 will also be analyzed by US EPA Method TO-17. Stantec will ensure the strategy for soil vapor sampling is consistent with the field sampling protocols described in the DTSC's vapor intrusion guidance.

5. LTCP Media Specific Criteria for Direct and Outdoor Air Criteria

As described in the March 31, 2014 SCM, a soil sample was collected from borehole VP-3 in the same area as borings SB-10 and SB-15, within the same depth interval used to define LTCP direct contact and outdoor air criteria of 5 to 10 feet bgs, and concentrations of benzene and ethylbenzene in this sample were less than the limits specified in the LTCP. Borehole VP-3 is located approximately 10 feet from boring SB-10 and 5 feet from boring SB-15. Results from borehole VP-3 are more recent and are therefore considered more representative of current soil conditions. Based on these data, Stantec stated that no further assessment is warranted; however, to address ACEH concerns, Stantec proposes advancing one soil boring each adjacent to former borings SB-10 and SB-15 within the interval of 0 to 10 feet bgs to evaluate whether soil conditions in that interval near the former borings meet LTCP direct contact and outdoor air criteria. Additional details regarding the proposed scope of work are provided in the work plan addendum section, and the locations are shown on ***Figure 1****.*

6. Revised Data Gap Investigation Work Plan and Focused Site Conceptual Model

Stantec does not believe any revisions to the March 31, 2014 SCM are necessary, other than the addition of soil borings to Table 2 of Appendix B in the SCM, which summarizes proposed investigation activities. An updated Table 2 is provided in ***Attachment B****.*

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DATA GAP WORK PLAN ADDENDUM

In addition to the scope of work for soil vapor investigation proposed in the March 31, 2014 SCM, Stantec is proposing the advancement of three shallow soil borings (SB-24, SB-25, and SB-26; shown on **Figure 1**) to evaluate petroleum hydrocarbons in soil near former fueling features. Results will be used to evaluate whether the Site meets the media-specific criteria set forth in the LTCP.

Permitting and Notifications

Stantec will obtain all necessary permits from Alameda County. As required by law, Underground Service Alert (USA) - North will be notified at least 48 hours prior to any intrusive activities. In addition to notifying USA - North, Stantec will retain the service of a private utility locating contractor to determine if underground utilities are located near the proposed locations.

Soil Boring Advancement

Stantec will contract a California-licensed (C-57) driller to advance proposed soil borings SB-24, SB-25, and SB-26 to total depths of approximately 5 feet bgs (SB-24) or 10 feet bgs (SB-25 and SB-26). Field activities will be performed under the direction of a State of California professional geologist. Detailed field records of all activities will be recorded by Stantec field personnel and will include Site conditions, sampling processes, names of field personnel, pertinent dates and times, etc. To minimize the risk of disturbance to potentially undetectable subsurface utilities and because of the shallow sample depths required for this assessment, the entire length of each boring will be advanced using a hand auger. The proposed locations may change slightly due to the presence of utilities at or near the proposed locations, and the completion depths may be adjusted based on conditions observed in the field.

Soil Sampling

Soil cores will be collected using a slide hammer with a stainless steel or brass sleeve insert or an attachment on the hand auger that holds a soil sleeve. Stantec field personnel will log soil cores for lithological content using the Unified Soil Classification System (USCS) as a guide and for relative moisture content, composition, first-encountered groundwater, photoionization detector (PID) readings, and other notable field observations. Portions of each soil core will be placed in a Ziploc® bag and field-screened using a PID to evaluate the presence of VOCs that may collect in the headspace of the bag.

Each soil boring will be logged, and soil samples will be collected at approximately 2.5-foot intervals to the targeted total depth (i.e., 2.5, 5, 7.5, and 10 feet bgs). Each soil sample collected

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will be sealed with Teflon® sheets, capped with plastic end caps, labeled with identifying information, and stored in an ice-filled cooler for preservation before submittal for laboratory analysis.

Soil Sample Laboratory Analysis

Soil samples will be transported and submitted under chain-of-custody protocol to Eurofins Lancaster Laboratories, Inc. (Lancaster), a State of California-certified analytical laboratory, and analyzed for BTEX compounds and naphthalene by US EPA Method 8260B (SW-846). In addition, soil samples collected from boring SB-24, near the former waste oil UST, will be analyzed for PAHs by US EPA 8270C-SIM.

Soil Boring Completion Activities

After each soil boring has been advanced to the proposed depth and representative soil and groundwater samples have been collected, each soil boring will be completed to ground surface with Portland cement grout. The Portland cement grout will consist of approximately 95 percent Portland cement and 5 percent bentonite powder.

Waste Management

Investigation-derived waste (e.g., soil cuttings, decontamination water, etc.) generated during the proposed field activities will be placed in Department of Transportation-approved 55-gallon drums. A composite soil sample will be collected from the drums and submitted to Lancaster for waste characterization purposes. The drums will be properly labeled and stored on Site pending receipt of analytical results and profile evaluation by CRA. CRA will arrange removal and disposal of all waste.

Report Preparation

Data gathered during the proposed additional investigation activities will be documented in an additional investigation report. The report will include a summary of field activities; tabulated soil and soil vapor analytical data; a Site location map; an updated Site Plan showing the final locations of the soil borings; soil boring logs with geologic descriptions; certified laboratory analysis reports and chain-of-custody documentation; an updated well survey; a discussion of the findings based on the new data; and conclusions and recommendations, as appropriate.

Results from the additional investigation will be used to reevaluate identified data gaps and to determine whether the case complies with the media-specific LTCP criteria. If additional data gaps are identified, further assessment may be recommended. If it is determined that the Site

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meets LTCP criteria, the report will also include a low-threat closure request, and all further assessment will cease.

Schedule of Activities

Stantec will begin planning and scheduling the proposed investigation activities following approval of this work plan addendum by ACEH. Stantec anticipates completing the pre-field planning, health and safety plan, and permitting over a span of approximately one month. Following pre-field activities, Stantec anticipates completing the field work over a span of approximately one week. Final certified laboratory analysis reports will be obtained approximately 2 to 4 weeks following submission of the samples to the laboratory. Stantec will submit the additional investigation report to ACEH approximately 45 days following the receipt of all final certified laboratory analysis reports.

If you have any questions regarding the contents of this document, please feel free to contact Stantec Project Manager, Travis Flora, at (408)356-6124 or Travis.Flora@stantec.com.

Reference: Response to Technical Comments and Data Gap Work Plan Addendum
Former Chevron-Branded Service Station 91723
9757 San Leandro Street, Oakland, CA

LIMITATIONS

This document entitled *Response to Technical Comments and Data Gap Work Plan Addendum* was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Chevron Environmental Management Company (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Erin O'Malley
(signature)

Erin O'Malley
Project Engineer

Reviewed by _____
(signature)

Travis L. Flora
Associate Project Manager

Reviewed by _____
(signature)

PROFESSIONAL GEOLOGIST
Mark Paul Bare
No. 8435
EXP 6.30.16
STATE OF CALIFORNIA

Mark Bare, P.G.
Senior Geologist

Reference: Response to Technical Comments and Data Gap Work Plan Addendum
Former Chevron-Branded Service Station 91723
9757 San Leandro Street, Oakland, CA

Attachments:

Table 1 – Water Supply Well Details

Figure 1 – Site Plan showing Proposed Soil Boring Locations
Figure 2 – Water Supply Well Survey

Attachment A – ACEH Correspondence
Attachment B – Updated Table 2

c.

Ms. Carryl MacLeod, Chevron Environmental Management Company, 6101 Bollinger Canyon Road, San Ramon, CA 94583 – Electronic Copy

Linda Hothem Trust c/o Mr. Jan Greben, Greben & Associates, 125 E De La Guerra St. #203, Santa Barbara, CA 93101

Ms. Jean Kida, Gerber Products, 12 Vreeland Road, Florham Park, NJ 07932

Table

Table 1
Water Supply Well Survey Results
Former Chevron-branded Service Station 91723
9757 San Leandro Street
Oakland, California

Map ID	State Well ID	Well Owner ID	Distance from Site[(1)] (feet)	Direction from Site[(1)]	Use	Installation Date
1	2S3W22P2	P2	100	SW (Down-gradient)	Industrial	04/09/48
2	2S3W22K	--	195	NE (Up-gradient)	Industrial	01/11/67
3	2S3W22P3	P3	220	W-NW (Cross-Gradient)	Industrial	--
4	2S3W22K8	--	435	NE (Up-gradient)	Industrial	01/91
5	2S3W22L1	--	590	N (Cross-gradient)	Industrial	09/18/54
6	2S3W22Q1	--	765	ESE (Cross-gradient)	Industrial	07/27/56
7	2S3W22J1,J2	--	765	ESE (Cross-gradient)	Industrial	46

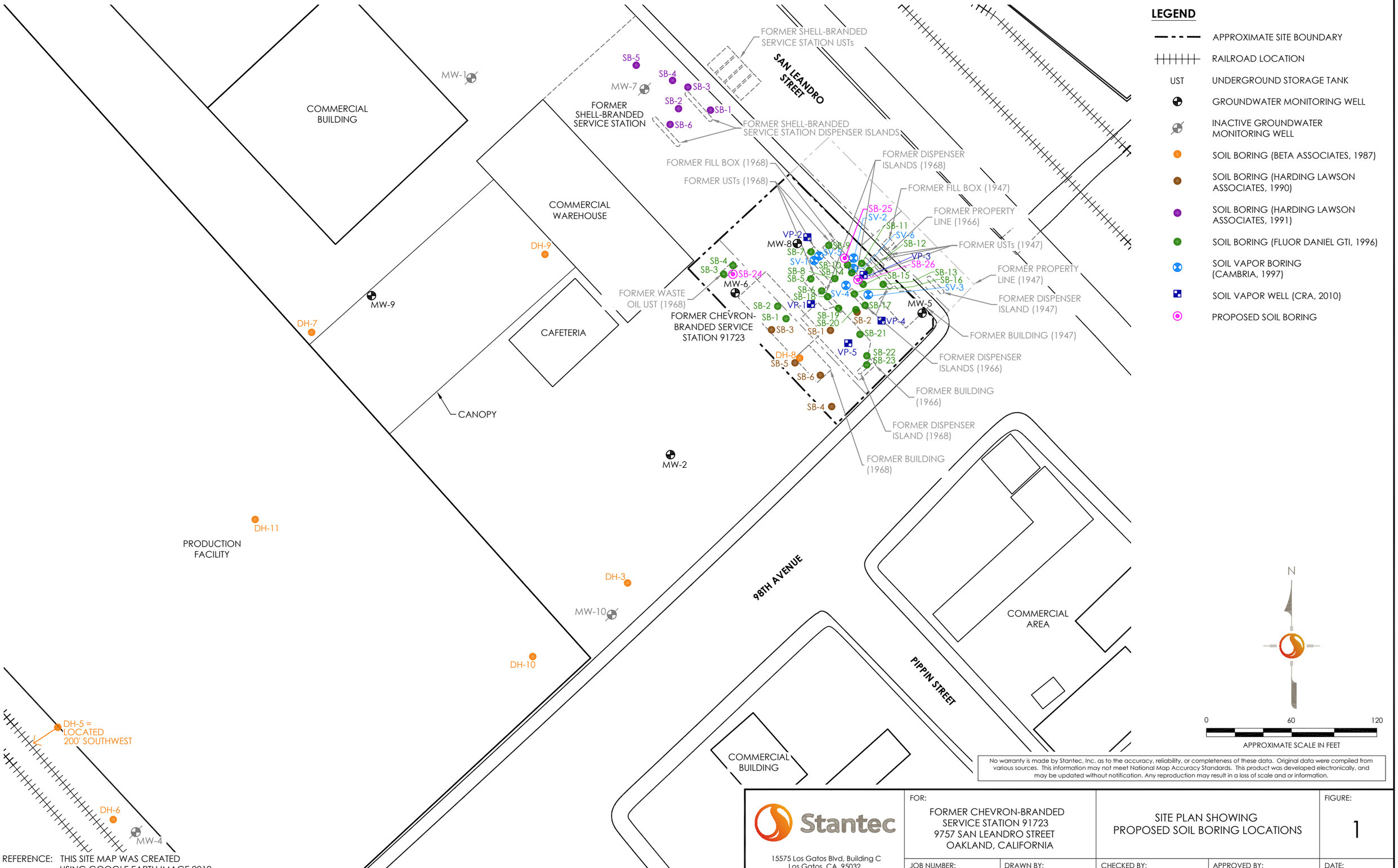
Notes:

(1) Approximate distance and direction determined from well location address and/or drawings on boring logs, where available, and Google Earth® images.

Abbreviations:

-- = information not available
bgs = below ground surface

Figures



REFERENCE: THIS SITE MAP WAS CREATED USING GOOGLE EARTH IMAGE 2012.

No warranty is made by Stantec, Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

Stantec
15575 Los Gatos Blvd, Building C
Los Gatos, CA 95032
Phone: (408)356-6124 Fax: (408)356-6138

FOR:
FORMER CHEVRON-BRANDED SERVICE STATION 91723
9757 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

SITE PLAN SHOWING
PROPOSED SOIL BORING LOCATIONS

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
211602332	JRO	EEO	TLF	08/06/14

FILEPATH:P:\Chevron\N. CA Marketing Sites\Carryl MacLeod Portfolio\91723\Drawings\2014\91723_2014.dwg | jopalekopsahl | Aug 06, 2014 at 10:16 | Layout: Fig 2_SP

LEGEND

WATER SUPPLY WELLS

1 INDUSTRIAL WELL (P2)

2 INDUSTRIAL WELL

3 INDUSTRIAL WELL (P3)

4 INDUSTRIAL WELL

5 INDUSTRIAL WELL

6 INDUSTRIAL WELL

7 INDUSTRIAL WELL

N

0 500 1,000

APPROXIMATE SCALE IN FEET

Stantec
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Los Gatos, CA 95032
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FOR:
FORMER CHEVRON-BRANDED
SERVICE STATION 91723
9757 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

WATER SUPPLY WELL SURVEY

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
211602332	JRO	EEO	TLF	08/06/14

FILEPATH:P:\Chevron\N. CA Marketing Sites\Carryl MacLeod Portfolio\91723\Drawings\2014\91723_SRS-2014.dwg|jopalekopsahl|Aug 06, 2014 at 10:16|Layout: Fig 1_WSS

Attachment A

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

May 29, 2014

Ms. Carryl MacLeod
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
(sent via email to CMacleod@chevron.com)

9401 San Leandro LP
104 Caledonia Street
Sausalito, CA 94965

Ms. Linda Hothem
Linda Hothem and Pacam Group LLC
104 Caledonia Street
Sausalito, CA 94965

Ms. Gene Kida
Gerber Products
12 Vreeland Road
Fiorham Park, NJ 07932

Linda Hothem Trust
c/o Mr. Jan Greben
Greben & Associates
1332 Anacapa Street,
Suite 110
Santa Barbara, CA 93101

Subject: Request for Data Gap Work Plan Addendum; Fuel Leak Case No. RO0000412 and Geotracker Global ID T0600101789, Chevron #9-1723; 9757 San Leandro Street, Oakland, CA 94603

Dear Ladies and Gentlemen:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Site Conceptual Model and Data Gap Work Plan*, dated March 31, 2014, and the *First Quarter 2014 Semi-Annual Groundwater Monitoring Report*, dated May 20, 2014. Both reports were prepared and submitted on your behalf by Stantec Consulting Services, Inc (Stantec). The work plan recommends determining the status of four unmonitored offsite wells, and resampling of vapor at five existing onsite soil vapor wells.

ACEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files, to determine if the site is eligible for closure as a low risk site under the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP). Based on ACEH staff review, we have determined that the site fails to meet the LTCP General Criteria b (Petroleum Release Only), f (Secondary Source Removal), and the Media-Specific Criteria for Groundwater, the Media-Specific Criteria for Vapor Intrusion to Indoor Air, and the Media-Specific Criteria for Direct Contact (see Geotracker for a copy of the review).

Therefore, at this juncture ACEH requests that you prepare a Revised Data Gap Investigation Work Plan that is supported by a focused Site Conceptual Model (SCM) to address the Technical Comments provided below.

TECHNICAL COMMENTS

1. **LTCP General Criteria b (Unauthorized Release Consists Only of Petroleum) –** For purposes of this policy, petroleum is defined as crude oil, or any fraction thereof, which is liquid at standard conditions and temperature and pressure, which means 60 degrees Fahrenheit and 14.7 pounds per square inch absolute including the following substances: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents and used oils, including any additives and blending agents such as oxygenates contained in the formulation of the substances.

A former waste oil underground storage tank (UST) was previously located in the northwestern downgradient corner of the subject site. Soil bores SB3 and SB-4 were installed in the general location of the former UST; however, soil was only analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and Total Oil and Grease (TOG). Other standard waste oil constituents were not analyzed for. This includes analysis for Total Petroleum Hydrocarbons as diesel (TPHd), volatile organic compounds (VOCs; full scan including BTEX, MTBE, TBA, naphthalene, and chlorinated hydrocarbons [HVOCs]), Semi-Volatile Organic Compounds (SVOCs; including polycyclic aromatic hydrocarbons [PAHs], pentachlorophenol, and creosote), wear metals, and polychlorinated biphenyls (PCBs). In contrast, groundwater from wells MW-1, MW-7, and MW-9, the only wells located downgradient of the former waste oil UST (as documented by the existing rose diagram, and the groundwater contour map included in the SCM [Figure 3]), detected HVOCs up to 61.0 micrograms per liter (µg/l) 1,1-dichloroethene, 9.5 µg/l 1,1-dichloroethane, and 93.1 µg/l 1,1,1-trichloroethane. Each of these concentrations exceeds the December 2013 Environmental Screening Levels (ESLs) for groundwater for these compounds as defined by the San Francisco Regional Water Quality Control Board (RWQCB).

Soil bores SB-1 to SB-8, installed at the former Shell service station immediately west of the subject site (identified as one of the downgradient flow directions), did not detect chlorinated VOCs in soil at that site, and as a result concluded the source of the HVOCs was offsite. A similar investigation has not been conducted at the subject site. It appears appropriate to investigate the potential for the former waste oil UST to be a source for this contamination, and it appears appropriate to redevelop and resample all wells installed to investigate the site vicinity for HVOCs. Please be aware that the lack of detection of HVOCs at wells upgradient of the former waste oil UST as provided in the referenced SCM and Work Plan is not an argument for the lack of a HVOC source at the subject site.

Please present a strategy in the Data Gap Work Plan (described in Technical Comment 6 below) to address the data gaps identified above. Please identify any additional data gaps, such as the need for analysis of other contaminants that are typically associated with waste oil contamination. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Technical Comment 6 below.

2. **General Criteria f – Secondary Source Has Been Removed to the Extent Practicable –** "Secondary source" is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described in the policy. "To the extent practicable" means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy.

   Two generations of USTs and associated infrastructure (dispensers, piping, etc.) have been installed at the subject site. Both generations of USTs are reported to have been removed prior to 1978 and the environmental era, and no removal records have been reported or submitted to document actions taken at the time of removal, including the disposal of soil or of the USTs. At present, it cannot be determined that secondary sources have been removed to the extent practicable. It is also not certain that all USTs and associated appurtenances were removed due to the lack of reports.

   Soil bores SB-7, SB-8, SB-10, VP-2, VP-3, and VP-4 document soil concentrations equal or greater than 100 milligrams per kilogram TPHg in soil between approximately 0 and 5 feet below grade surface (bgs). Except for VP-2 and VP-4, each bore appears to be installed through, or immediately adjacent to, former UST or dispenser locations. Additionally, soil bores SB-4 and SB-9 document fill material for which no samples were submitted for analysis, and associated soil produced either moderate or the highest

photoionization detector (PID) responses for the bores. Finally, multiple USTs, dispensers, and a fill box were located offsite in the public right-of-way and although they are reported to have been removed no data has been presented to document this. Based on the distribution of onsite contaminant concentrations, offsite structures appear to be one source of onsite contamination.

ACEH recognizes that should secondary sources be present in these areas, they may not be substantial contributors to groundwater contamination onsite at this time; however, residual soil contamination affects other criteria of the LTCP (soil vapor, direct contact and outdoor air exposure). At a minimum it appears appropriate to investigate the magnitude of residual soil contamination at offsite locations in the event that a Site Management Plan is required to handle residual contamination at the site upon closure.

Please present a strategy in the Data Gap Work Plan (described in Technical Comment 6 below) to address the items discussed above.

3. **LTCP Media Specific Criteria for Groundwater –** To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed in the policy.

   Our review of the case files indicates that insufficient data collection and analysis has been presented to support the requisite characteristics of plume stability or plume classification as follows:

   a. **Length of Groundwater Plume –** The length of the groundwater plume associated with gasoline contamination appears to be essentially defined; however, the soil and groundwater chemical signature at the site indicates that diesel fuel may also have been dispensed at the facility. A substantial number of historic groundwater and soil analytical results document higher concentrations of total xylenes than total benzene. Because diesel fuel contains substantially more xylenes than benzene by formulation, ACEH requests the inclusion of TPHd analysis of groundwater from all wells for a minimum of one monitoring event. ACEH recognizes that preferential degradation of benzene over xylenes can also produce this result. However, the presence, or lack thereof, of detectable TPHd at the site can affect the determination of the downgradient and lateral extent of a groundwater plume under the LTCP. Additionally, the presence, or lack thereof, of detectable TPHd at the site can also affect the importance of analytical samples for naphthalene in soil and groundwater. The need for additional analysis for TPHd is requested to be evaluated thereafter.

   b. **Extent of Soil Contamination –** The lateral extent of soil contamination does not appear to be defined onsite. Soil bores located around the property perimeter (MW-5, SB-22, SB-23, SB-4 (1989), SB-6 (1989), SB-5 (1989), MW-6, SB-3, SB-4, SB-11, SV-6, SB-12, VP-3, SB-13, and etc.) indicate that the extent of soil contamination has not been defined. Each of these soil bores contains TPHg concentrations greater than 100 milligrams per kilogram (mg/kg) in soil in either the 0 to 5 or the 5 to 10 foot zones. This can affect the extent of groundwater contamination at the site and vicinity. ACEH recognizes that contaminant concentrations may have undergone a reduction in soil since collection; however, this also has not been documented.

   c. **Preferential Pathways –** The SCM states that a utility preferential pathway was not conducted as existing data indicates that known sources appear to be present only onsite. ACEH disagrees with this assessment as discussed in detail in Technical Comment 2 above. Additionally, relatively shallow groundwater indicates that it is appropriate to conduct a utility survey at the site and local vicinity due to the potential for offsite sources to be present, and due to the potential that the lateral extent of the groundwater plume may be affected by these conduits.

   d. **Distance to Existing Water Supply Well –** Up to three water supply wells as close as 100 feet to the site have previously been reported in the immediate vicinity of the site. Although the SCM reports that a well survey was conducted in November 2013; however, a table summarizing, and a figure depicting approximate well locations, was not included. ACEH recognizes that well construction details are confidential; however, a table and figure without these details are appropriate and substantially assist ACEH in determining the suitability of the site to meet this criterion of the LTCP. ACEH requests a tabulation and well location depiction be submitted in the requested work plan addendum below. Please note that all deep constructions (cathodic, extraction industrial, irrigation, recovery,

geotechnical wells, and etc.) within ¼-mile of the site are requested to be included in the summary table and located. All have the potential to act as vertical conduits, and all can be impacted by contamination from the site. Please also be aware that abandoned, non-destroyed, wells may still be vertical conduits. For deep wells proximal to the subject site (especially well P2 and others located within 100 feet of the site), ACEH requests further determination be provided (owner, DWR, ACPWA, etc.) that wells stated or assumed to be abandoned or destroyed are so.

Please present a strategy in the Revised Data Gap Work Plan (described in Technical Comment 6 below) to address the items discussed above.

4. **LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air –** The LTCP describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

   Our review of the case files indicates that the site data collection and analysis fail to support the requisite characteristics of one of the four scenarios. This is also the finding of the SCM, and a work plan was included with the SCM to conduct additional soil vapor sampling at all vapor wells (VP-1 to VP-5). Please see Technical Comment 7 for initial comments relative to this portion of the work plan.

   ACEH's review of site data for this criterion, indicates that multiple soil bores document hydrocarbon contamination over 100 mg/kg in the 0 to 5 foot depth (SB-7, SB-8, and SB-10) and the majority of vapor wells (VP-2 to VP-6) document soil oxygen content between 0.84 and 2.9%. While soil samples that were collected at vapor wells VP-2, VP-3, and VP-4 were collected at a depth of 6 feet, the detection of TPHg over 100 mg/kg in these soil samples implies the distribution of shallow hydrocarbon concentrations at the site is more widespread. Based on existing soil vapor data, scenario 4 of the vapor intrusion to indoor air criterion is precluded as benzene concentrations at all soil vapor wells were over the requisite LTCP soil vapor value at a commercial site without a bioattenuation zone of 280 micrograms per cubic meter ($\mu g/m^3$) benzene. Concentrations ranged up to 540,000 $\mu g/m^3$ benzene.

   The soil vapor work plan proposed a series of actions with which ACEH is in general agreement with; however, ACEH requests one modification to the approach. Specifically, vapor samples are proposed to be analyzed by TO-15 for naphthalene. Please be aware that Department of Toxic Substance Control (DTSC) documents recommend that TO-17 should be used to confirm TO-15 sampling results (Appendix E, *Active Soil Gas Investigations Advisory,* dated April 30, 2012). In part this appears to be related to lower naphthalene concentrations when Nylaflow tubing is used to sample soil vapor. Therefore ACEH requests that TO-17 be used to confirm naphthalene results by TO-15.

   Additionally, please ensure that your strategy is consistent with the field sampling protocols described in the Department of Toxic Substances Control's Final Vapor Intrusion Guidance (October 2011).

5. **LTCP Media Specific Criteria for Direct Contact and Outdoor Air Criteria** – The LTCP describes conditions where direct contact with contaminated soil or inhalation of contaminants volatized to outdoor air poses a low threat to human health. According to the policy, release sites where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if the maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth bgs. Alternatively, the policy allows for a site specific risk assessment that demonstrates that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health, or controlling exposure through the use of mitigation measures, or institutional or engineering controls.

   Our review of the case files indicates that insufficient data collection and analysis has been presented to satisfy the media-specific criteria for direct contact and outdoor air exposure. Specifically, concentrations of benzene and / or ethylbenzene at a depth of 10 feet bgs in soil bores B-10 and B-15 fail the LTCP numeric goals for these contaminants. Concentrations up to 99 mg/kg benzene, and 150 mg/kg ethylbenzene were

detected at these locations. Stantec indicates that the data is older (April 1996), was collected in the groundwater zone, was thus more representative of groundwater concentrations at the time, and may have biodegraded in the interim period of time. Stantec considers more recent analytical data, collected at a shallower depth (6 feet), to be more representative of current concentrations at the site. Conversely, ACEH's review of groundwater analytical concentrations in site wells during the 1996 time period did not find similar groundwater concentrations to these concentrations. Concentrations only up to 2,100 µg/l TPHg, 280 µg/l benzene, and 56 µg/l ethylbenzene were documented in 1996 at vicinity wells. ACEH is in agreement that degradation is likely to have occurred in the intervening years; however, is limited to available analytical data and cannot make assumptions that contamination is below specific LTCP goals for a site.

Therefore, please present a strategy in the Revised Data Gap Work Plan described in Item 6 below to collect sufficient data to satisfy the direct contact and outdoor air exposure criteria at the site in a sufficient number of appropriate areas. Sample and analyze soil in the 0 to 5 and the 5 to 10 foot intervals to characterize the vertical soil profile, at the groundwater interface, lithologic changes, and at areas of obvious impact. The collection of naphthalene analysis is also requested.

6. **Revised Data Gap Investigation Work Plan and Focused Site Conceptual Model –** Please prepare Revised Data Gap Investigation Work Plan to address the technical comments listed above. Please support the scope of work in the Revised Data Gap Investigation Work Plan with a focused SCM and Data Quality Objectives (DQOs) that relate the data collection to each LTCP criteria. For example please clarify which scenario within each Media-Specific Criteria a sampling strategy is intended to apply to.

   In order to expedite review, ACEH requests the focused SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment A "Site Conceptual Model Requisite Elements". Please sequence activities in the proposed revised data gap investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the following specified file naming convention and schedule:

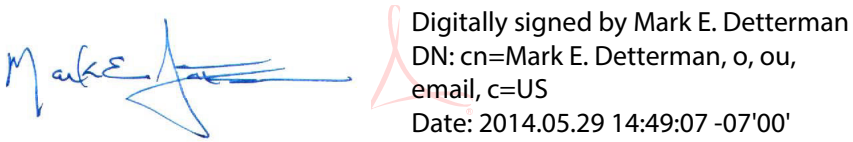
- **August 15, 2014 –** Work Plan Addendum
  File to be named: RO412_WP_ADEND_R_yyyy-mm-dd
- **November 21, 2014 –** Semi-Annual Groundwater Monitoring
  File to be named: RO412_GWM_R_yyyy-mm-dd
- **60 Days After Work Plan Approval –** Subsurface Investigation
  File to be named: RO412_SWI_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm. Additionally, if your email address does not appear on the cover page of this notification, ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

If you have any questions, please call me at 510-567-6876 or send me an email at mark.detterman@acgov.org.

Sincerely,



Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 - Responsible Party(ies) Legal Requirements/Obligations & ACEH Electronic Report Upload (ftp) Instructions

Attachment A – Site Conceptual Model Requisite Elements

cc: Ms. Alexis Fischer, Chevron Environmental Management Company, 6101 Bollinger Canyon Road, San Ramon, CA 94583; (sent via email to AFischer@chevron.com)

Travis Flora, Stantec Consulting Services, Inc., 15575 Los Gatos Blvd, Los Gatos, CA 95032; (sent via email to travis.flora@stantec.com)

Dilan Roe (sent via email to dilan.roe@acgov.org)
Mark Detterman (sent via email to mark.detterman@acgov.org)
Electronic file, GeoTracker

Attachment B

TABLE 2
Focused Site Conceptual Model
Former Chevron-branded Service Station 91723
9757 San Leandro Street, Oakland, California

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	The status of previous Site wells MW-1, MW-4, MW-7, and MW-10 is unknown.	Conduct a Site visit to determine the status (location and condition) of former Site wells.	Determining the status of former Site wells MW-1, MW-4, MW-7, and MW-10 will satisfy ACEH request in February 3, 2014 correspondence.	None.
2	Site conditions do not meet LTCP criteria for petroleum vapor intrusion to indoor air.	Resample soil vapor wells VP-1 through VP-5.	Resampling of soil vapor wells VP-1 through VP-5 will allow for an evaluation of current soil vapor quality at the Site and whether the Site meets the criteria for petroleum vapor intrusion to indoor air set forth in the LTCP. Soil vapor wells VP-1 through VP-5 are adequately spaced across the Site and in the area of former fueling features.	TPH-GRO, BTEX compounds, and naphthalene by United States Environmental Protection Agency (US EPA) Method TO-15, and fixed gases (carbon dioxide, oxygen, methane, and helium) by American Society for Testing and Materials (ASTM) Method D-1946.
3	Shallow soil data adjacent to the former waste oil UST in the interval of 0 to 5 feet bgs.	Advance soil boring SB-24 adjacent to but not within the former waste oil UST pit, and collect a soil sample within the interval of 0 to 5 feet bgs to evaluate whether soil conditions meet LTCP direct contact and outdoor air criteria.	ACEH concerned soil in 0 to 5 feet bgs interval was screened with PID and no soil sample collected. Soil boring SB-24 should not be advanced within the former waste oil UST pit, because it is fill material and will not be representative of native soil conditions. Fill may also be too loose to collect in a sample sleeve.	BTEX compounds and naphthalene, by US EPA Method 8260B (SW-846). PAHs by US EPA Method 8270C-SIM.

TABLE 2
Focused Site Conceptual Model
Former Chevron-branded Service Station 91723
9757 San Leandro Street, Oakland, California

4	Current soil data adjacent to former borings SB-10 and SB-15 within the 0 to 5 feet bgs and 5 to 10 feet bgs intervals.	Advance one soil boring each adjacent to former borings SB-10 and SB-15 within the 0 to 5 feet bgs and 5 to 10 feet bgs intervals to evaluate whether soil conditions meet LTCP direct contact and outdoor air criteria.	ACEH did not agree that more recent soil data collected from VP-3 between former borings SB-10 and SB-15 satisfied LTCP criteria. One confirmation boring each will be advanced adjacent to SB-10 and SB-15 to evaluate current soil conditions.	BTEX compounds and naphthalene, by US EPA Method 8260B (SW-846).