Nicole M. Arceneaux
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 790-6912
Nicole.arceneaux@chevron.com

RECEIVED
By Alameda County Environmental Health 12:44 pm, Apr 20, 2015

December 23, 2014

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

Re: **Unocal No. 5781 (351640)**
3535 Pierson Street, Oakland, California
Fuel Leak Case No. RO0000253
GeoTracker Global ID #T0600101467

I have reviewed the attached report dated December 23, 2014.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Nicole Arceneaux
Project Manager

Attachment: Data Gap Investigation Work Plan by AECOM

AECOM
2020 L Street, suite 400
Sacramento, CA 95811

916.414.5800 tel
916.414.5850 fax

December 23, 2014

Mr. Keith Nowell
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Data Gap Investigation Work Plan**
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California
Fuel Leak Case No. RO0000253
Geotracker Global ID # T0600101467

Dear Mr. Nowell,

On behalf of Chevron Environmental Management Company's (EMC's) affiliate, Union Oil Company of California ("Union Oil"), AECOM is pleased to present this data gap investigation work plan for the above-referenced site. In a meeting on August 4, 2014 between Alameda County Environmental Health (ACEH), EMC, and AECOM, ACEH generally concurred with AECOM's proposed changes submitted on April 28, 2014 to the April 10, 2014 ACEH directive (**Attachment A**). A tabular version of this data gap investigation work plan is included as **Attachment B**.

SITE BACKGROUND

Site Location

The site is located at 3535 Pierson Street, Oakland, California (**Figure 1**). The site is an active service station located on the northwest corner of Pierson Street and MacArthur Boulevard in Oakland, California. The current site configuration includes a station building, two 12,000-gallon gasoline underground storage tanks (USTs), and two dispenser islands, which are illustrated on **Figure 2**. The station building consists of a market/deli and an office area. A City of Oakland sewer easement crosses the west and southeast corner of the Site (Delta 2011). There was a former vehicle repair shop located onsite which has now been converted to a deli.

Geology and Hydrogeology

The site is located on the western flank of the Oakland Hills which are underlain by the Quaternary San Antonio Formation and Holocene alluvium of the Temescal Formation. The San Antonio Formation consists of gravels with a silt and clay matrix. The Temescal Formation consists of alluvial deposits composed of unconsolidated, moderately sorted permeable silt with coarse sand and gravel (California Geological Survey 2002; 2010).

The majority of the site is underlain by fine-grained relatively low-permeability silt and clay which contain scattered deposits of clayey sand and silty sand to the depth explored. A zone of "well graded" and "poorly graded" gravel with silt and sand between 14 to 18 feet below ground surface

(bgs) was described in boring logs for MW-2, MW-A, SB-3, and SB-6. A similar, more permeable zone within the same depth range was described as clayey sand with gravel and sandy clay from boring logs for MW-9 and MW-5, respectively.

The site is located in the Santa Clara Valley Groundwater Basin and the East Bay Plain Subbasin (DWR 2004). Groundwater appears to be locally semi-confined. Several borings drilled to the same depth as water observed in site monitoring wells were dry. Additionally, groundwater in all monitoring wells purge dry during sampling and are very slow to recover (greater than 2-hour recovery time). Due to the slow recovery, no purge samples are collected and submitted for laboratory analysis if the wells do not recharge.

A re-evaluation of historical groundwater contours and the most current contour by AECOM with all given data points within the same relative shallow aquifer suggests the site is in an area of groundwater convergence with a generally east/southeast trending swale which is consistent with the site's topographic setting. The presence of this swale leads to shifts in the groundwater flow direction and the groundwater elevations rise and fall.

UST History

In 1967, one 10,000-gallon premium gasoline UST, one 10,000-gallon unleaded gasoline UST, and one 280-gallon waste-oil UST were installed at the site. In December 1989 the two 10,000-gallon fuel USTs, one the 280-gallon waste-oil UST, and associated product piping was removed. The second generation waste-oil UST was installed at the rear of the station building. Seven confirmation soil samples were collected from the gasoline UST excavation and product piping trench.

In April 2008, the second-generation waste-oil UST was removed and four soil samples (WO1-WO4) were collected from the excavation. The samples were all non-detect for all analysis; therefore, no overexcavation was conducted. The stockpiled soil was backfilled into the tank cavity following receipt of the laboratory results and the tank was not replaced.

Assessment History

Since 1990, various consultants have advanced 15 soil borings (MW-1 through MW-3, EB1, EB2, SB-1 through SB-8, SWC-2, SWD-2) and installed 7 groundwater monitoring wells (MW-A, and MW-4 through MW-9) and collected soil samples during UST removal activities at the site (**Figure 2**). Based on historical analytical data, data gaps were identified in the analysis of the first generation former waste oil tank.

Groundwater monitoring has been conducted quarterly for all site wells since their installation. During the fourth quarter of 2012, 0.39 feet of free product was observed in well MW-5. Free product has not been observed in MW-5 since that time. Currently, hydrocarbons in groundwater have not been delineated down-gradient of MW-5 for all groundwater flow directions.

Remediation History

In February 1990, the waste oil UST pit was over-excavated to 16 feet bgs. The excavation was reported to extend 35 feet to the east, 10 feet to the west, 15 feet to the south, and 2 feet to the

north from the waste oil UST location. Approximately 50 cubic yards of soil were removed. Further excavation was not possible due to utility lines in the area. The gasoline UST pit was not over-excavated due to low concentrations on the side walls and bottom of the excavation. No holes or cracks were observed in the gasoline USTs. After confirmation sampling approximately 5,000 gallons of groundwater were removed from the excavation and disposed of offsite.

In April 2010, a portion of the sidewall of manhole cover #2 (MH-2) , located approximately 10 feet west of MW-4, was observed to be leaking liquid into the storm drain. Innovative Construction Solutions (ICS) placed a permanent patch on the portion of the storm drain that had been identified to be seeping water into the storm drain. Follow-up inspections and PID observations of the manhole repair indicated the repair was intact and no further water was seeping into the storm drain manhole.

SCOPE OF WORK

Based on the remaining site data gaps presented in the ACEH email dated April 10, 2014, AECOM will advance six soil borings, three in the area of the first generation waste oil tank and three to the east of MW-5 (**Attachment A**). Hydropunch groundwater grab samples will be collected from the three soil borings east of MW-5 to evaluate and delineate down-gradient groundwater conditions.

Pre-field Activities

AECOM will perform pre-field duties which will include:

- Developing a health and safety plan that incorporates the proposed assessment tasks and includes requirements for the types of personal protective equipment to be used, air monitoring requirements, and potential chemical exposure hazards;
- Obtaining any necessary permits;
- Marking the proposed locations in white paint and contacting Underground Service Alert of Northern California at least 48 hours prior to subsurface work;
- Completing Chevron's borehole-clearance procedure steps;
- Utilizing a private utility locator to check for subsurface utilities; and
- Providing notification of the field schedule to ACEH and relevant stakeholders.

First Generation Waste Oil Tank Soil Assessment

AECOM proposes to advance three soil borings near the former first generation waste oil tank (**Figure 2**). The soil borings will be advanced using hand-auger techniques to 10 feet below ground surface (bgs). AECOM will collect discrete soil samples from 2, 5, and 10 feet bgs. AECOM's field geologist will continuously log the soil lithology, record photoionization detector (PID) readings, and other field data under the supervision of a professional geologist.

Downgradient Soil and Groundwater Assessment

AECOM proposes to advance three soil borings east of MW-5 (**Figure 2**). The borings will be advanced using hand-auger techniques to 8 feet bgs and then advanced with direct push technology to approximately 20 feet bgs for hyrdropunch groundwater sample collection. AECOM

will collect discrete soil samples at 5-foot intervals beginning at 5 feet bgs. AECOM's field geologist will continuously log the soil lithology, record photoionization detector (PID) readings, and other field data under the supervision of a professional geologist.

Due to low water yield at the site, AECOM will collect one discrete groundwater sample from each of the soil borings using a hydropunch sampler, or similar sealed-screen one-time discrete sampling methods. The targeted depth for each boring is between 15 and 20 feet bgs to intercept the higher permeability layer that MW-5 is screened in. The depth may be modified in the field based on the observed saturated soil conditions at each soil borings. The hydropunch sampler will be opened to allow groundwater to enter the sampler. A small volume of groundwater will be purged to remove suspended sediment and then a sample will be collected using a disposable bailer directly into the laboratory supplied sample containers.

Sample Analysis

All samples will be analyzed total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd), and total oil and grease (TOG) by Environmental Protection Agency (EPA) Method 8015; volatile organic compounds (VOCs) using EPA Method 8260B, and semi-volatile organic compounds (SVOCs) by EPA 8270-SIM.

The samples will be submitted to a California State-certified laboratory using standard chain-of-custody and sample preservation methods. AECOM will electronically report the analytical data to the GeoTracker information system in accordance with AB2886 requirements.

Waste Characterization and Disposal

Field personnel will store and label all soil cuttings, water, and decontamination water in 55-gallon, Department of Transportation-approved drums. Upon receipt of laboratory analytical results, the waste will be transported to licensed disposal facilities under waste manifest documentation.

Reporting

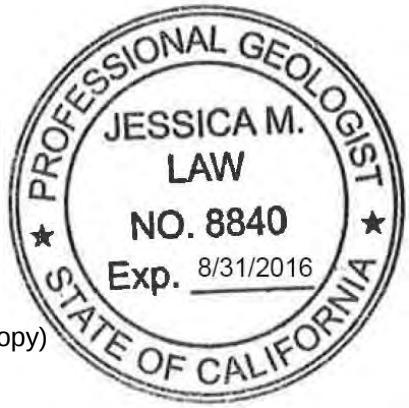
AECOM will submit a report summarizing the investigation results approximately 12 weeks after the completion of the work. The report will also be uploaded to the GeoTracker database to comply with state requirements. AECOM will submit well completion reports to the Department of Water Resources.

If you have any questions regarding this project, please contact James Harms of AECOM at (916) 414-5800.

Sincerely,

James Harms
Project Manager

Jessica Law, PG
Project Geologist
Stamped: 12/23/14



ccs: Ms. Nicole M. Arceneaux, EMC (via electronic copy)
DeLong Liu, United Brothers Enterprise, Inc., property owner (via paper copy)

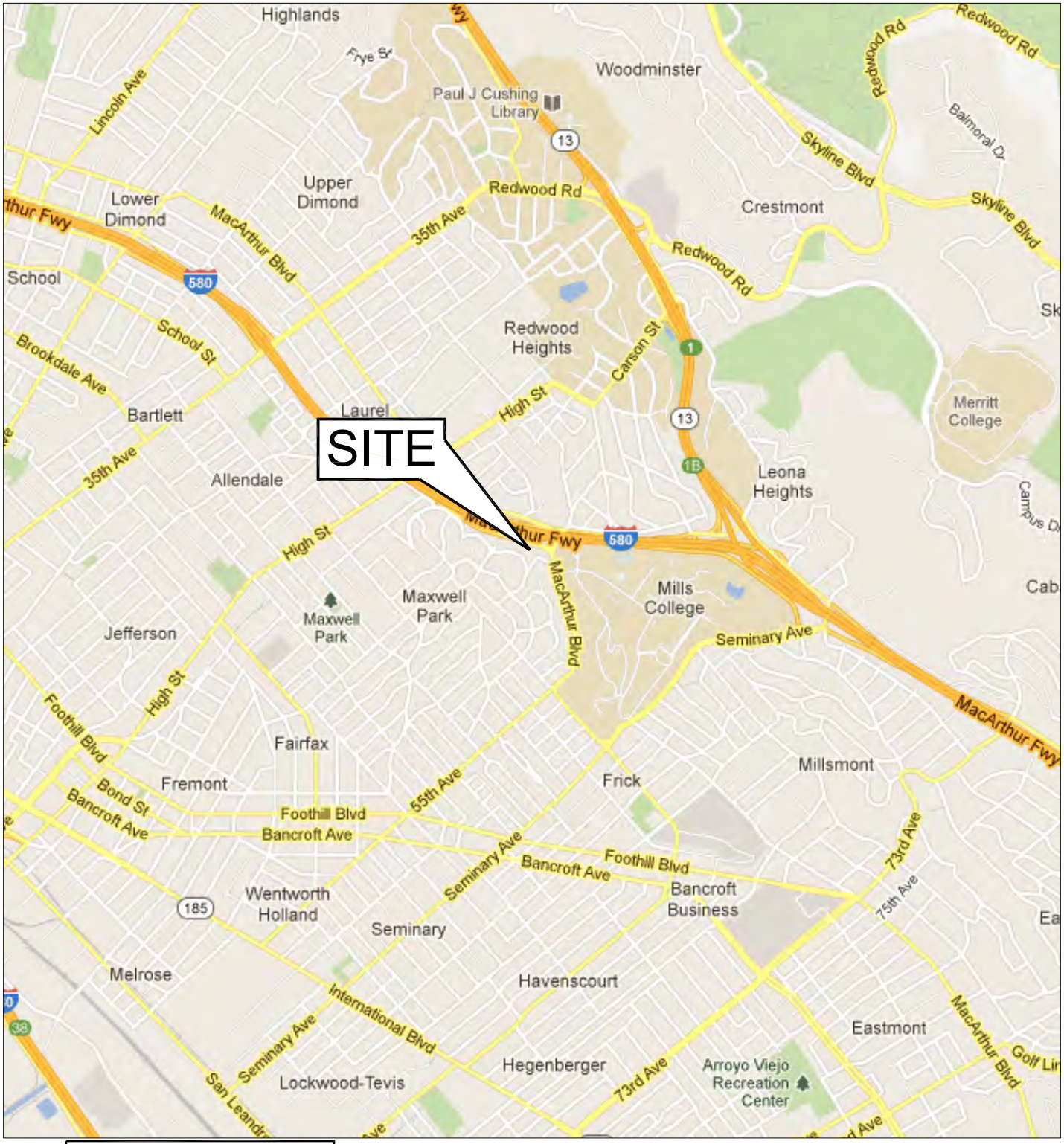
Enclosures:
Figures:

Figure 1 Site Location Map
Figure 2 Site Plan with Proposed Sample Locations

Attachments:

Attachment A Agency Correspondence
Attachment B Tabular Data Gap Investigation Work Plan

Figures



SOURCE: Google Maps (R) dated July 24, 2012

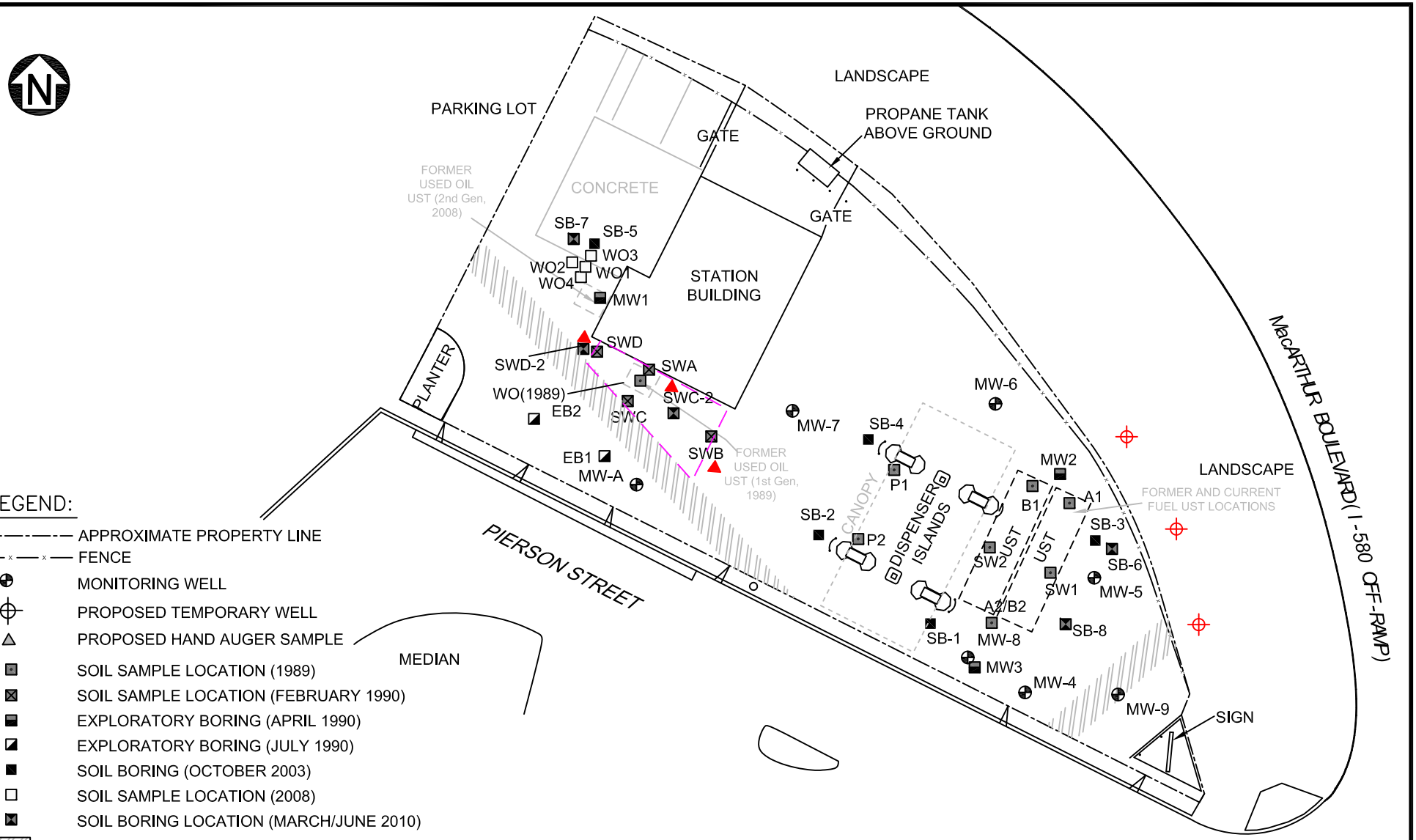
FIGURE 1

SITE LOCATION MAP

UNOCAL NO. 5781
(351640)
3535 PIERSON STREET
OAKLAND, CALIFORNIA

PROJECT NO.	DRAWN BY 04/15/2014
FILE NO. 351640	PREPARED BY CD
REVISION NO.	REVIEWED BY JH

AECOM



Base map created by Delta Consultants, Inc.

SITE PLAN
WITH PROPOSED SAMPLE LOCATIONS

RO253, Unocal #5781 (351640)
3535 Pierson Street, Oakland, California

SCALE:	DATE:	PROJECT NUMBER:
1" = 30'	10/09/2014	10/09/2014

AECOM
2020 L STREET, SUITE 400
SACRAMENTO, CALIFORNIA 95811
PHONE: (916) 414-5800
FAX: (916) 414-5850
WEB: HTTP://WWW.AECOM.COM

DESIGNED BY:	REVISIONS				FIGURE NUMBER:
	NO.:	DESCRIPTION:	DATE:	BY:	2
DRAWN BY: JH					
CHECKED BY: JL					
APPROVED BY: JH					

P:\ENV\01231-CHEVRON\76PRODUCTS_TRANSFER_SITES\351640_5781_OAKLAND\7.0 DELIVERABLES\7.2 CADD\NEW FOLDER\FIG2_SITE_MAP.DWG

Attachment A

Agency Correspondence

From:	Harms, James
To:	Nowell, Keith, Env. Health; "TimBishop@chevron.com"
Cc:	Fischer, Alexis N; Roe, Dilan, Env. Health
Subject:	RE: Fuel Leak Case RO253 Unocal #5781, 3535 Pierson St., Oakland
Date:	Monday, April 28, 2014 3:30:00 PM
Attachments:	RO253_351640_DGI_Figure_20140422.pdf ANALYT_R_1990-03-19.pdf RO253_EB1-2_SWC2_data.pdf

Dear Mr. Nowell,

Per the April 10, 2014 email correspondence below AECOM has prepared the attached draft figure. The following brief responses to the technical comments help explain the justification for the proposed locations.

Technical Comments

A. Soil Gas- Indoor Air Investigation– Please prepare a wok plan to evaluate soils gas concentrations and indoor air quality for the station building. ACEH requires the soil gas (SG) investigation be conducted following the guidelines presented in the following documents: Final- Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance) prepared by Cal/EPA, dated October 2011 and Advisory- Active Soil Gas Investigations prepared by Cal/EPA, LARWQCB, and San Francisco RWQCB, dated April 2012., not the ASTM Method D6234-04(2010) *Standard Practices for Expedited Site Characterization of Vadose Zone and Groundwater Contamination at Hazardous Waste Sites* identified in the revised work plan. The DTSC guidance documents can be reviewed at the following web addresses: http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf and http://www.dtsc.ca.gov/SiteCleanup/upload/VI_ActiveSoilGasAdvisory_FINAL_043012.pdf.

    a. Response: The PCE concentrations presented in the April 8, 2014 meeting were erroneously noted on the historic table. The PCE concentrations were all in micrograms per kilogram (ug/kg), not milligrams per kilogram (mg/kg) as presented, see the attached analytical report. Based on this fact and actual site maximum concentration of 0.16 mg/kg of PCE, which is below both the residential and commercial ESLs of 0.37 and 0.70 mg/kg respectively, a soil gas evaluation is not currently warranted. A full list of VOCs will be analyzed for the locations around the former waste oil tank as stated below, after which those soil results will be analyzed and the need for soil gas/vapor sampling assessed.

B. Waste Oil Tank Investigation – Based on the reported presence of VOCs associated with the first generation waste oil UST, ACEH recommends the investigation (Item 1 above) include VOC analysis by EPA Test Method 8260B. Additionally, the borings should be advanced to a sufficient depth for the recovery and analysis of groundwater samples. Please collect at least one soil sample from within the 0- to 5-foot bgs zone and from the 5- to 10-foot bgs zone from each of the two borings to satisfy the LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure.

    a. Response: Three soil samples around the former first generation waste oil tank are proposed on the attached figure. We concur with the 0 to 10 foot soil sampling strategy and collection of VOCs to satisfy the LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure. However groundwater sampling is not warranted as borings EB1 and EB2 groundwater samples, collected at 33.5 and 37.7 feet respectively, contained low TPH and BTEX compounds and were non-

detect for all other VOCs. In 2010 SWC-2 was advanced in the area of the waste oil tank, groundwater was encountered and a sample was collected at 13 feet below grade, TPHd was the only analyte detected. Even though a full VOC suite was not analyzed the lack of detectable BTEX compounds makes the significant presence of other VOCs unlikely. The horizontal extent of impacted soil is generally well characterized around the former waste oil tank through samples EB-1 and EB-2, MW-A, MW-1, and MW-7. The three soil borings will characterize the remaining soil concentrations inside the area of impacted soil.

C. Contaminant Plume Delineation –- The installation of the three proposed temporary wells appear to address the groundwater scenario for when the flow crosses the proposed trough. ACEH recommends the groundwater investigation include an evaluation to validate the trough concept. The investigation should include at least one temporary well located to the east, as groundwater exiting in this direction has the potential of impacting the Julia Morgan School for Girls located to the east across MacArthur Boulevard.

   a. Response: The proposed temporary wells have been shifted outward to the east and will assess the impact potential for the Julia Morgan School."

Thank you

Jim Harms
Environmental Scientist
Environment
D 916.414.5863 C 916.919.9210
jim.harms@aecom.com

AECOM
2020 L Street, Suite 400, Sacramento, CA 95811 USA
T +1 916.414.5800 F +1 916.414.5850
www.aecom.com

From: Nowell, Keith, Env. Health [mailto:Keith.Nowell@acgov.org]
Sent: Thursday, April 10, 2014 9:09 AM
To: 'TimBishop@chevron.com'
Cc: Harms, James; Fischer, Alexis N; Roe, Dilan, Env. Health
Subject: Fuel Leak Case RO253 Unocal #5781, 3535 Pierson St., Oakland

Dear Mr. Bishop,

Thank you, Jim Harms of AECOM, and Alexis Fischer of Chevron Environmental Management Company (Chevron) for participating in the meeting on April 8, 2014 regarding fuel leak case for Unocal #5781, 3535 Pierson St., Oakland, Alameda County Environmental Health (ACEH) case number RO00000253. The site is situated at the north corner of Pierson Street and MacArthur Boulevard, fronting Pierson Street. An off-ramp from Highway 580 bounds the northern edge of the site. The purpose of the meeting was to discuss the status of the case and identify action items to move the case forward toward closure, including a discussion of the draft *Site Conceptual Model and Data Gap Investigation Work Plan* (SCM-DGI) provided to ACEH in an email dated April 7, 2014 and prepared by AECOM for the subject site. The SCM-DGI was requested by ACEH in a Directive dated February 3, 2014. As discussed in the meeting, the data presented in soil data tables reported elevated volatile organic compound (VOC) concentrations including tetrachloroethene (PCE)

concentrations to 160 milligrams per kilogram (mg/kg). ACEH expressed concern that these concentrations may pose an immediate threat to indoor air quality at the site and requested a work plan for a soil gas study be prepared and submitted to ACEH in the very near future to assess indoor air quality.

Additionally, a previously identified data gap- that of an incomplete well survey- is in the process of being addressed through a well search request to the Alameda County Public Works (ACPW).

In its February 3, 2014 Directive, ACEH requested the variable groundwater flow direction at the site be addressed. The SCM-DGI presented a hydrogeologic model suggesting a groundwater-low trough may exist on the site into which groundwater flows. In times of high groundwater the flow crosses the trough, the remainder of the time groundwater converges into the trough from either side and exits to the southeast.

Data gaps identified in the SCM-DGI and proposed activity to address the data gaps are:

1. Data Gap- Incomplete scope of analysis for the first generation waste oil underground storage tank (UST).

   Proposed Activity- Advance two hand auger borings in the vicinity of the first generation waste oil UST to a depth of 10 feet below the ground surface (bgs) for recovery of soil samples. Analyze soil samples for total petroleum hydrocarbons (TPH) as gasoline (TPHg) , TPH as diesel (TPHd), benzene, toluene, ethylbenzene, and xylenes (BTEX) total oil and grease (TOG), semi-volatile organic compounds (SVOCs).

2. Data Gap- Contaminant Plume Delineation

   Proposed Activity- Advance three borings to approximately 20 feet bgs using direct push technology with borings converted to temporary groundwater monitoring wells. The locations of the temporary wells are shown to be easterly of groundwater monitoring well MW-5. The temporary wells will be surveyed and tied into the existing well network. Recovered soil and groundwater samples are to be analyzed for TPHg, TPHd and TOG by EPA Test Method 8015; BTEX and methyl tertiary butyl ether (MTBE) by EPA Test Method 8260; and SVOCs by EPA Test Method 8270.

3. Data Gap- Presence of diesel in soil and groundwater. Diesel was reported at 8,300 mg/kg beneath first generation waste oil tank and historically reported in groundwater monitoring well MW-5.

   Proposed Activity- Confirm fuel dispensing history and add TPHd to analyte suite in Item 1 and Item 2 above.

ACEH is in general concurrence with proposed actions presented in the SCM-DGI provided the following technical comments are addressed.

Technical Comments

A. Soil Gas- Indoor Air Investigation– Please prepare a wok plan to evaluate soils gas concentrations and indoor air quality for the station building. ACEH requires the soil gas (SG) investigation be conducted following the guidelines presented in the following documents: Final- Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance) prepared by Cal/EPA, dated October 2011 and Advisory- Active Soil Gas Investigations prepared by Cal/EPA, LARWQCB, and San Francisco RWQCB, dated April 2012., not the ASTM Method D6234-04(2010) *Standard Practices for Expedited Site*

Characterization of Vadose Zone and Groundwater Contamination at Hazardous Waste Sites identified in the revised work plan. The DTSC guidance documents can be reviewed at the following web addresses: http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf and http://www.dtsc.ca.gov/SiteCleanup/upload/VI_ActiveSoilGasAdvisory_FINAL_043012.pdf.

B. Waste Oil Tank Investigation – Based on the reported presence of VOCs associated with the first generation waste oil UST, ACEH recommends the investigation (Item 1 above) include VOC analysis by EPA Test Method 8260B. Additionally, the borings should be advanced to a sufficient depth for the recovery and analysis of groundwater samples. Please collect at least one soil sample from within the 0- to 5-foot bgs zone and from the 5- to 10-foot bgs zone from each of the two borings to satisfy the LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure.

C. Contaminant Plume Delineation –- The installation of the three proposed temporary wells appear to address the groundwater scenario for when the flow crosses the proposed trough. ACEH recommends the groundwater investigation include an evaluation to validate the trough concept. The investigation should include at least one temporary well located to the east, as groundwater exiting in this direction has the potential of impacting the Julia Morgan School for Girls located to the east across MacArthur Boulevard.

Technical Report Request

Please upload technical reports to the ACEH ftp site (Attention: Keith Nowell), and to the State Water Resources Control Board's Geotracker website, in accordance with the following specified file naming convention and schedule below. Please provide ACEH (Attention: Keith Nowell), the draft figure depicting proposed hydropunch and temporary well locations. After review and approval of the draft figure by ACEH, please prepare a work plan for the soil and groundwater investigations.

- **April 25, 2014 – Draft Figure Depicting Proposed Hydropunch and Temporary Well Locations**
- **May 2, 2014 – Soil Gas Investigation Work Plan** (file name: RO0000253_WP_R_yyyy-mm-dd)
- **To Be Determined – Soil and Groundwater Investigation Work Plan** (file name: RO0000253_WP_R_yyyy-mm-dd)

Thank you for your cooperation. Should you have any questions regarding this correspondence or your case, please call me at (510) 567-6764 or send an electronic mail message at keith.nowell@acgov.org.

Regards,

Keith Nowell

Keith Nowell PG, CHG
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda , CA 94502-6540
phone: 510 / 567 - 6764
fax: 510 / 337 - 9335
email: keith.nowell@acgov.org

PDF copies of case files can be reviewed/downloaded at:

http://www.acgov.org/aceh/lop/ust.htm

Attachment B

Tabular Data Gap Investigation Work Plan

Attachment B
Data Gap Investigation Work Plan
RO253, Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, CA

Item	Data Gaps	Proposed Investigation	Rationale	Analysis
1	The well survey performed did not include a search of the Alameda County Public Works (ACPW) well database.	ACPW well search was submitted on 2/28/2014 and received on May 12, 2014.	NA	NA
2	ACEH Technical Comment: Waste Oil Tank Investigation: Based on the reported presence of VOCs associated with the first generation waste oil UST, ACEH recommends the investigation (Item 1 above) include VOC analysis by EPA Test Method 8260B. Additionally, the borings should be advanced to a sufficient depth for the recovery and analysis of groundwater samples. Please collect at least one soil sample from within the 0- to 5-foot bgs zone and from the 5- to 10-foot bgs zone from each of the two borings to satisfy the LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure.	**Near First Generation Waste Oil UST:** AECOM proposes to advance three soil borings near the former first generation waste oil tank (**Figure 2**). The soil borings will be advanced using hand-auger techniques to 10 feet below ground surface (bgs). AECOM will collect discrete soil samples from 2, 5, and 10 feet bgs. AECOM's field geologist will continuously log the soil lithology, record photoionization detector (PID) readings, and other field data under the supervision of a professional geologist. Confirm fuel dispensing history and explain diesel detections in groundwater.	Assessment of current soil conditions near former first generation waste oil UST. Fuel dispensing history will be included in the reporting following the work plan implementation.	Soil samples submitted to the laboratory will be analyzed for: - TPHg, TPHd, and TOG by EPA Method 8015 - VOCs by EPA Method 8260B -SVOCs by 8270
3	ACEH Technical Comment: Contaminant Plume Length The installation of the three proposed temporary wells appear to address the groundwater scenario for when the flow crosses the proposed trough. ACEH recommends the groundwater investigation include an evaluation to validate the trough concept. The investigation should include at least one temporary well located to the east, as groundwater exiting in this direction has the potential of impacting the Julia Morgan School for Girls located to the east across MacArthur Boulevard.	**East of MW-5:** **Boring Locations**: Three borings will be advanced following borehole clearance for below surface utilities by Underground Service Alert and by using hand digging to 8 feet bgs prior to direct push drilling. The borings will be spaced generally east of MW-5 as shown on **Figure 2**. The borings will be terminated at approximately 20 feet below ground surface (bgs). **Soil Sampling**; AECOM will collect discrete soil samples at 5-foot intervals beginning at 5 feet bgs. AECOM's field geologist will continuously log the soil lithology, record photoionization detector (PID) readings, and other field data under the supervision of a professional geologist. **Groundwater Sampling:** Due to low water yield at the site, AECOM will collect one discrete groundwater sample from each of the soil borings using a hydropunch sampler, or similar sealed-screen one-time discrete sampling methods. The targeted depth for each boring is between 15 and 20 feet bgs to intercept the higher permeability layer that MW-5 is screened in. The depth may be modified in the field based on the observed saturated soil conditions at each soil borings. The hydropunch sampler will be opened to allow groundwater to enter the sampler. A small volume of groundwater will be purged to remove suspended sediment and then a sample will be collected using a disposable bailer directly into the laboratory supplied sample containers. **Reporting**: A report will be prepared to include boring logs; soil data, groundwater gradient data, survey data and groundwater sampling data. The site conceptual model will be revised and the presence of remaining data gaps assessed.	**Borings targeted at 15-20 feet bgs:** -The site has very low yield wells (water does not typically recover quickly after purging). -Existing cross sections that include MW-5 exhibit a "medium" permeability zone to between 13 and 15 feet bgs and "high" permeability zone below15 feet. The proposed targetl screen zone at 15-20 feet is within this higher permeability zone. -Groundwater is typically encountered between 15 and 20 feet bgs.	Soil and groundwater samples submitted to the laboratory will be analyzed for: - TPHg, TPHd, and TOG by EPA Method 8015 - VOCs by EPA Method 8260B -SVOCs by 8270