ConocoPhillips
76 Broadway
Sacramento, California 95818

January 24, 2011

Mr. Jerry Wickham
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

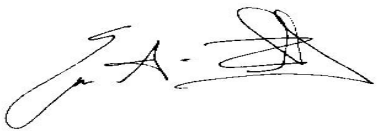
Re: **Work Plan Transmittal**
Work Plan for Air Sampling and Sub-Slab Vapor Sampling
76 Service Station #1156
4276 MacArthur Boulevard
Oakland, California
Fuel leak Case No. RO0000409

Dear Mr. Wickham:

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached work plan is/are true and correct.

If you have any questions or need additional information, please call Mr. Ted Moise at (510) 245-5162.

Sincerely,



Eric G. Hetrick
Site Manager
Risk Management & Remediation

Workplan for Continued Additional Assessment

76 Station 1156
4276 MacArthur Blvd
Oakland, CA

Antea Group Project No. C101156630

January 24, 2011

Prepared for:
ConocoPhillips
76 Broadway
Sacramento, CA 95818

Prepared by:
Antea™Group
11050 White Rock Road
Suite 110
Rancho Cordova, CA
95670

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, California 95670
www.anteagroup.com

January 24, 2011

Mr. Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: **WORKPLAN FOR AIR SAMPLING AND SUB_SLAB VAPOR SAMPLING**
76 Service Station No. 1156
4276 MacArthur Boulevard
Oakland, California
AOC 1112
RO# 0409

Dear Mr. Wickham:

Due to global rebranding, as of January 5, 2011 Delta Consultants has become Antea Group. Any reports submitted prior to this date will still be referenced as Delta reports.

On behalf of ConocoPhillips Company (COP), Antea Group (Antea) is submitting this *Workplan for* ***Air Sampling and Sub-Slab Vapor Sampling***, for the above referenced location.

Please contact James Barnard at (916) 503-1279 if you have questions.

Sincerely,
ANTEA GROUP

James B. Barnard, P.G.
Project Manager

cc: Mr. Ted Moise - ConocoPhillips (electronic copy only)

WORKPLAN FOR AIR SAMPLING AND SUB-SLAB VAPOR SAMPLING

76 Service Station No. 1156
4276 MacArthur Blvd
Oakland, California

January 24, 2010

Prepared for

ConocoPhillips Company
76 Broadway
Sacramento, California

The material and data in this report were prepared under the supervision and direction of the undersigned.

Delta Consultants

Alan Buehler
Staff Geologist

James B. Barnard, P.G.
Project Manager
California Registered Professional Geologist No. 7478

1.0 INTRODUCTION

On behalf of ConocoPhillips Company (COP), Delta Consultants (Delta) has prepared this Workplan for **Air Sampling and Sub-Slab Vapor Sampling** to address several data gaps present in previous assessment, as directed by the Alameda County Health Care Services Agency (ACHCSA) in its letter to COP dated November 24, 2010 for the site at the above location (**Figure 1**). A copy of the ACHCSA letter is provided as **Attachment A**.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The site is located at the northeast corner of MacArthur Boulevard and High Street in Oakland, California (**Figure 1**). Two 10,000-gallon gasoline underground storage tanks (USTs) are located in the southwestern portion of the site. Two dispenser islands are located at the site, one to the northwest and one to the east of the USTs (**Figure 2**). In October 2009, an undocumented concrete vault was discovered underground in the northeast corner of the site, in vicinity of MW-1. A station building is located in the northern portion of the site. There are currently eight groundwater monitoring wells (MW-1 through MW-8) and one tank backfill well (TP-1) located at and in the vicinity of the site. Properties in the immediate vicinity of the site are utilized for commercial and residential purposes.

2.2 PREVIOUS ASSESSMENT

Historical sampling locations and site facilities are shown on attached **Figure 2**.

In 1997, Pacific Environmental Group Inc. (PEG) advanced 5 soil vapor probes in the vicinity of the USTs, dispenser islands, and product lines to depths ranging from 3 to 15 feet below ground surface (bgs). Soil vapor concentrations of total petroleum hydrocarbons as gasoline (TPHg), benzene, and methyl tert butyl ether (MTBE) were reported at up to 4,700 micrograms per liter (µg/L), 70 µg/L, and 140 µg/L respectively.

In 1998, Tosco Marketing Company (Tosco) removed one 280-gallon waste oil tank (WOT), and removed and replaced two 10,000-gallon gasoline USTs, associated piping, and fuel dispensers. Laboratory analyses of soil samples collected at 6 feet bgs from the sidewall at each end of the gasoline UST detected concentrations of total purgeable petroleum hydrocarbons as gasoline (TPPHg) of up to 1,200 mg/Kg. TPPHg was not detected at or above laboratory method detection limits in soil samples collected adjacent to dispensers D1 (2 feet bgs) and D4 (3 feet bgs), but was detected in soil samples collected at from adjacent to dispensers D2 (3 feet bgs) and D3 (3 feet bgs) and within the former product line trenching up to 590 mg/Kg. Laboratory analyses of soil samples from the bottom and western and southern limits of the WOT excavation detected TPPHg (6.5 feet bgs) up to 130 mg/Kg, total extractable petroleum hydrocarbons as diesel (TEPHd) up to 78,000 mg/Kg, Benzene up to 0.55 mg/Kg, and total recoverable petroleum hydrocarbons (TRPH) up to 8,400 mg/Kg. Following the over-excavation of approximately 4.6 tons of soil from the WOT excavation, TEPHd, TPPHg, benzene, and TRPH were reported in soil samples collected from the WOT excavation (6 feet bgs) at concentrations up to 560 mg/kg, 81 mg/kg, 0.64 mg/kg, and 360 mg/kg, respectively. Analytical data from a groundwater sample collected from the gasoline UST excavation (7.5 feet bgs) reported TPPHg, toluene, ethyl-benzene, and xylene concentrations of 41,000 µg/L, 400 µg/L, 770 µg/L and 8,900 µg/L, respectively. Benzene was reported to be below the laboratory's indicated reporting limit in the groundwater sample collected for analysis.

In 1999, Environmental Resolutions Inc. (ERI) conducted a soil and groundwater assessment which included the installation of four on-site groundwater monitoring wells (MW-1 through MW-4). Analytical data from the soil samples collected from the borings at a depth of 10.5 feet bgs reported TPPHg, benzene, and MTBE at concentrations up to 6,800 mg/kg, 2.6 mg/kg, and 0.71 mg/kg, respectively. The soil sample collected from MW-1, near the former WIT, was also analyzed for TPHd and TPPH. Analytical data from this soil sample reported TEPHd and TRPH at concentrations of 140 mg/kg and 73 mg/kg, respectively. The groundwater sample collected from MW-1, near the former WOT, was analyzed for TEPHd, TRPH, TPPHg, BTEX, and MTBE. Analytical data from this water sample reported TEPHd, TPPHg, benzene,

toluene, ethyl-benzene, xylenes, and MTBE at concentrations of 16,000 µg/L, 120,000 µg/L, 11,000 µg/L, 27,000 µg/L, 3,300 µg/L, 18,000 µg/L, respectively. MTBE was at or below laboratory detection limits in MW-1. However, MTBE was detected in the groundwater sample from MW-2 at a concentration that varied from 4,500 µg/L (EPA Method 8260) to 11,000 µg/L (elevated laboratory detection limit).

Analytical data from an additional soil sample collected at a depth of 20.5 feet bgs from the MW-4 boring reported TPPHg, benzene, and MTBE below the laboratory's indicated reporting limits. Quarterly groundwater monitoring and sampling activities commenced in July 1999 and are currently ongoing.

In July 2001, ERI installed a UST pit backfill well (TP-1) and initiated monthly purging of groundwater from the UST excavation. Bi-weekly groundwater purging was conducted at the site using wells TP-1 and MW-1 from July 2001 through December 2004.

In August 2001, ERI installed three off-site monitoring wells (MW-5 though MW-7). Analytical data from soil samples collected from these well borings reported TPHg and MTBE below the laboratory's indicated reporting limits. Analytical data reported benzene in one soil sample collected from MW-7 (10 feet bgs) at a concentration of 0.18 mg/kg.

Beginning in June 2004, monitoring well MW-7 was added to the ongoing bi-weekly purging events. Approximately 1,600 gallons of groundwater were removed from monitoring well MW-7 from June through December 2004. A cumulative total of approximately 476,015 gallons of groundwater was removed from the site from July 2001 through December 2004.

ATC Associates became the new lead consultant for the site in January 2005.

Delta Consultants became the new consultant for the site in September 2005.

In October 2007, Delta advanced six on-site soil borings and installed an additional off-site monitoring well (MW-8). The details of this investigation were presented in Delta's *Site Investigation Report*, dated December 28, 2007.
In July 2009, Delta performed site assessment activities to additionally assess the horizontal and vertical migration of petroleum hydrocarbons in soil, groundwater, and soil vapor. A total of five borings were advanced outside the southeast, southwest and northwest perimeter of the station building (**Figure 2**). Seven temporary soil vapor sampling points were installed outside the perimeter of all sides of the station building. A complete summary of results and recommendations for future work was provided in Delta's September 8, 2009 *Site Investigation Report.*

2.3 SENSITIVE RECEPTORS

2001 – A GeoTracker database search was performed which identified four public water supply wells owned by the East Bay Regional Park District (Park District) present within a one-half mile radius of the site. Representatives from the Park District reported having no knowledge or records of any wells under their ownership or oversight located in this area and indicated that the wells may have belonged to the East Bay Municipal Utility District (EBMUD). EBMUD was contacted and reported no knowledge or records of any wells under their ownership or oversight located in this area.

Also in 2001- A Department of Water Resources (DWR) database search was performed which identified four water supply wells belonging to Mills College present within the one-half mile radius search area. A representative from Mills College indicated that all wells associated with Mills College had been destroyed and Mills College was now connected to a municipal water supply. The DWR search also indicated a well was located at 3397 Arkansas Street, approximately 880 feet outside of the search area. No other wells, surface water bodies, or potentially sensitive environmental habitats were identified during ERI's field receptor search.

2006 – A well survey, which included a visit to the DWR office in Sacramento, was performed to examine well log records and identify domestic wells within the survey area. The DWR survey identified two potential receptors within one mile of the site: one irrigation well located 0.9 miles northwest of the site and one domestic/irrigation well located 1.0 mile northeast of the site. Two additional potential receptors were identified, although the specific addresses could not be verified.

2.4 SITE GEOLOGY

The site is composed of unconsolidated deposits of sand and silt in a clay matrix, with some fine-grained gravel. Clay is predominant in the upper lithology with sandy/silty clay and clayey sand units, between approximately 1 to 15 feet bgs. The clay unit is underlain by clay interbedded with sandy clay, clayey sand, silty sands and some gravelly sandy clay units, observed to the maximum depth explored (44 feet bgs).

2.5 SITE HYDROGEOLOGY

During monitoring well installations, groundwater has typically been encountered at depths between 15 and 23.5 feet bgs in six of the eight installed monitoring wells. The reported first water in installed monitoring wells MW-5 (6 feet) and MW-6 (5.5 feet) is suspect and not to be considered first water. The previously mentioned groundwater depths correspond with the interface of the two aforementioned lithologic units. During the most recent groundwater monitoring event, conducted on July 23, 2009 (third quarter), the static depth to groundwater ranged from 1.10 feet (MW-8) to 7.32 feet (MW-7) below top of casing (TOC). The groundwater flow direction and gradient was interpreted to be to the southwest at 0.06 foot per foot (ft/ft). The predominant historical groundwater flow at the 76 service station has been to the west (with variations to the southwest) at an average gradient of approximately 0.06 foot per foot (ft/ft).

3.0 SCOPE OF WORK

On October 21, 2010, Delta submitted the *Additional Assessment Report* to ACHCSA. In their directive letter, dated November 24, 2010, ACHCSA identified some gaps on data presented in this assessment report pertaining to assessment of potential for vapor intrusion in the Oakland Veterinary Clinic. The directive letter addressed three specifics scopes of work to be performed: (1) assessment of offsite vapor intrusion risk be method of sub-slab vapor sampling within the vet clinic, as well as soil borings to the southwest and northeast of the vet clinic building; (2) assessment of onsite vapor intrusion risk by method of sub-slab vapor sampling inside the convenience area of the service station building; and (3) continued efforts to identify the unidentified concrete vault in the vicinity of the old waste oil UST, between the station building and the vet clinic building.

During a phone call between Mr. Jerry Wickham (ACHCSA) and Mr. James Barnard (Antea) on January 11, 2010, this scope of work was changed to (1) outdoor air monitoring in and around the crawl space below the raised floor portion of the neighboring building at the vet clinic, and (2) sub-slab vapor sampling inside the service station building convenience area. These changes were due to current physical access issues (**Figure 3**).

The purpose of this work plan is to address these issues.

3.1 PRE-FIELD ACTIVITIES

Before commencing field operations Antea will obtain the appropriate access agreement from the neighboring Oakland Veterinary Clinic. Antea will also prepare a site-specific Health and Safety Plan in accordance with state and federal requirements for use during additional site assessment activities.

Prior to performing any activities, Antea will identify and mark the proposed assessment locations and notify Underground Service Alert (USA) as required. A private utility locating service will also be contracted to clear the proposed working locations for underground utilities.

4.0 VET CLINIC AIR MONITORING

In order to satisfy the requests of ACHCSA, Antea proposes to collect six air samples in and around the crawl space below the raised floor portion of the building. Antea proposes to collect four air samples from within this crawl space, as well as two samples outside the crawlspace as control samples. Any activities performed on the vet clinic property will be subsequent to, and in compliance with, any access agreements made between the vet clinic ownership and ConocoPhillips.

4.1 VET CLINIC AIR SAMPLING PROCEDURE

A total of six sample locations are proposed. Four samples will be collected within the crawl space under the Vet Clinic, and two samples will be collected outside the crawl space. Proposed sample locations AS-1 through AS-4 will be located within the crawl space. Outside the crawl space, one sample (AS-6) will be collected between the vet clinic property and the service station building on the service station property, and one sample (AS-5) will be collected from within the planter area on the Vet Clinic property between the parking lot and the vet clinic building, at the front of the crawl space area.

Each sample will be collected with one 6-liter Summa® canister equipped with a flow regulator that is lab calibrated to allow the collection of a 6-liter sample over the period of 8 hours (approximately 12.5 mL per minute) in order to replicate possible employee/customer exposure during a typical business day. Each summa canister will be placed on the ground during sample collection. For sample locations within the crawl space not easily accessed by personnel or equipment, ¼ inch Teflon tubing will be used to extend the sampling inlet into the desired area. For the outside sample between the vet clinic and the service station, ¼ inch stainless steel tubing will be used to extend the sampling inlet up to the breathing zone.

4.2 VET CLINIC AIR SAMPLING

Each vapor sample collected will consist of one 6-liter Summa® canister. The canister will be used to analyze for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes (collectively BTEX), and 8 fuel oxygenates [methyl tert butyl ether (MTBE), tert amyl methyl ether (TAME), ethyl tert butyl ether (ETBE), diisopropyl ether (DIPE), tert butyl alcohol (TBA), ethylene dibromide (EDB), ethylene dichloride (EDC), and ethanol] by EPA Method TO-15, as well as Oxygen (O2), carbon dioxide (CO2), and methane (CH4) by EPA Fixed Gas Analysis (FGA). Carbon monoxide (CO) and nitrous oxide (NO) (by products of engine combustion) will also be analyzed by FEPA FGA to determine if vapor found in and around the crawl space may be due to high levels of vehicle exhaust. Vapor samples will be properly labeled and shipped to a California certified laboratory for analysis.

5.0 ONSITE SUB-SLAB VAPOR WELL PLACEMENT

Placement locations are limited as the interior space in this area is small, and filled with merchandise display shelving, beverage refrigerators, and an attendant/cashier area. In order to minimize the impedance upon the business, placement of sub-slab vapor wells within the service station building will be located in the office/storage room. The restroom is between the service bay and the office/storage room.

Interior floor surface covering (carpet, tile, etc.) could potentially dictate where wells are or are not placed.

5.1 SUB-SLAB VAPOR WELL INSTALLATION

Installation procedure for both offsite and onsite vapor wells will be the same Do we have any offsite vapor wells ?. An impact drill outfitted with a masonry bit will be used to drill a 2-inch diameter hole approximately 1 inch into the slab. A subsequent 1-inch diameter hole will be drilled through the middle and extend into the base rock (fill), approximately 5-inches below the bottom of the slab. The hole will be cleared of debris with a shop-type vacuum. A 3-inch long soil vapor

implant probe manufactured by AMS® will be attached to a 0.25-inch outside diameter (OD) stainless steel tube. The stainless steel tube will be cut to approximately 0.5-inch below the bottom of the slab. A 1-inch OD rubber seal will be placed around the stainless steel tube just above the vapor probe and a compression fitting plug will be attached to the top of the tube. The sampling apparatus will then be placed into the 1-inch OD hole so the vapor probe is positioned below the concrete slab and the rubber seal fits tightly in the hole to prevent intrusion of bentonite and cement. Approximately 3 inches of dry granular bentonite will be placed in the hole on top of the rubber seal. The remainder of the 1-inch OD hole will be filled with neat cement until the intersection with the 2-inch hole. The 2-inch hole will be covered with a specially designed tamper-resistant stainless steel cap which sits flush with grade.

In Delta's experience, the base rock fill below concrete slabs may sometimes be saturated in sites with high groundwater conditions and/or irrigation systems. If saturated base rock is encountered or water collects in the sub-slab holes during the installation, Delta will not install the soil vapor probes and the holes will be backfilled with concrete.

A construction detail for sub-slab vapor well is included as **Figure 4**.

4.4 SAMPLING TRAIN SETUP

The sampling train is the full assembly of all of the sampling Summa® canisters and tubing. The train will consist of a valve at the wellhead with Teflon tubing leading to a 4-way brass union. From here, Teflon tubing will connect two 1-liter sample Summa® canisters, and a syringe used for well purging. A Swagelok® valve will be placed in front of the purging syringe. Each of the sampling canisters will have dedicated flow regulators and pressure gauges. All fittings will be Swagelok®.

4.5 SOIL VAPOR WELL VACUUM TESTING

During the collection of vapor samples from the sub-slab soil vapor wells, two one-liter sample Summa® canisters and a one-liter purge Summa® canister will be connected to the vapor tight Swagelok® wellhead valve via Teflon® tubing. The one-liter purge canister and one-liter sample canisters will all be equipped with a dedicated vacuum gauge, filter, and flow regulator. Swagelok type fittings will be used for all connections. New sample Summa® canisters will be used at each sampling location. A one-liter Summa® canister will be used for vacuum testing. The sampling wells will be purged by syringe (**Section 3.2.1.3**).

Prior to sample collection, a vacuum test of the sampling train between the Summa® canisters and the wellhead valve will be performed for ten (10) minutes by opening the purge canister valve, while valves on the sample canisters and wellhead remain closed. The vapor tight Swagelok® wellhead valve will remain closed. The initial vacuum reading should be approximately thirty (30) inches of mercury (inches Hg). If vacuum cannot be maintained for ten (10) minutes, all sampling activities will be terminated until the vacuum can be maintained. This vacuum test serves as a mechanical leak test for the portion of the sampling manifold outside of the shroud.

4.6 SOIL VAPOR WELL PURGING

Sub-slab vapor wells will be purged using a 50 ml plastic syringe because the vacuum gauge on a one-liter Summa canister cannot accurately reflect the small amount of vapor being purged. The wellhead will be a 4-way Swagelok® valve with one outlet connected to the two Summa® canisters and the other connected to Teflon® tubing equipped with an air-tight adapter for the syringe connection. The wells will be purged by opening the valve to the syringe, and purging three dead space volumes by pulling back on the plunger of the syringe at an approximately rate of 50 ml/min.

4.7 LEAK TESTING

During sample collection, Delta field staff will continually utilize 1,1 difloroethane (1,1-DFA) as a leak check compound to evaluate the integrity of the system. Prior to vapor sample collection, the vapor sampling manifold where it exits the well will be enclosed in a vapor containment shroud made of plastic that will be filled with leak detection compound, and the shroud will be sealed with a bentonite slurry or appropriate substitute.

4.8 SOIL VAPOR WELL SAMPLING

Following vacuum testing, purging, and application of the sampling shroud and leak detection compound, samples will be collected. With the valve to the purging syringe closed, the valve on the first 1-liter Summa® canister will be opened and the sample collected. Once the first sample is collected, the valve on the first canister will be closed, and the valve on the second canister will be opened, and the second sample collected. Once both samples are collected, the sampling train will be deconstructed and the area cleaned.

Each vapor sample collected will consist of two 1-liter Summa® canisters. The first canister will be used to analyze for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes (collectively BTEX), and 8 fuel oxygenates [methyl tert butyl ether (MTBE), tert amyl methyl ether (TAME), ethyl tert butyl ether (ETBE), diisopropyl ether (DIPE), tert butyl alcohol (TBA), ethylene dibromide (EDB), ethylene dichloride (EDC), and ethanol] and IPA by EPA Method TO-15. The second summa will be used to analyze for Oxygen (O2), carbon dioxide (CO2), and methane (CH4) by EPA Fixed Gas Analysis. Vapor samples will be properly labeled and shipped to a California certified laboratory for analysis.

5.1 DISPOSAL OF GENERATED WASTE

Drill cuttings and wastewater generated during proposed soil, groundwater and soil vapor assessment activities will be placed into properly labeled 55-gallon Department of Transportation (DOT) approved steel drums and temporarily stored at the service station site. Samples of the soil waste will be collected, properly labeled and placed on ice for submittal to a California-certified laboratory and analyzed for TPHg and TPHd by EPA Method 8015M and BTEX, and MTBE by EPA Method 8260B. Additionally, soil samples will also be analyzed for CAM 17 metals by EPA Method 6010. A chain-of-custody will accompany the samples during transportation to the laboratory. Subsequent to receiving the laboratory analytical results, the drummed drill cuttings and wastewater will be profiled, transported, and disposed of at a COP approved facility.

6.0 PREVIOUSLY UNIDENTIFIED VAULT/UTILITY

Following the November 10, 2009 meeting with ACHCSA, Mr. James Barnard (Delta) and Mr. Terry Grayson (COP) performed a site visit to review existing site conditions and identify any potential obstacles related to the proposed soil, groundwater and soil vapor sampling locations. During this visit, a previously unidentified underground concrete vault was observed near MW-1. The vault was not identified in Environmental Data Resources (EDRs) or Sandborn Fire Insurance maps of the parcel. Construction detail and historical use is unknown. The vault is of unknown depth and is currently filled with sand. A two foot long field instrument was used to probe the sand, and was unable to locate the bottom of the vault. When the instrument was removed from the sand a faint hydrocarbon odor was noted.

Delta inspected the vault further, and found that underneath the metal lid there is what appears to be a sewer cleanout. The age and deterioration of the “cleanout” cap caused Delta to be unable to open and better identify the structure. In an attempt to better assess this structure, Delta used ground penetrating radar (GPR) to attempt to identify utility lines running to and from this “cleanout”. A line running from the restroom area of the building to the “cleanout” was identified, but no line running from the “cleanout” to the sewer main approximately 6 feet to the north could be identified. This, unfortunately, leaves the identity of this structure still undetermined. The only way to positively identify the nature of this structure is to open the “cleanout” lid, but it is highly likely that the structure would be destroyed or badly damaged in the process due to age and deterioration, as mentioned above.

The scope of work originally proposed in Delta's *Workplan for Additional Assessment*, dated March 1, 2010, proposed a sonic boring within the vault itself. However, the discovery of the line structure inside the vault made this impossible. Borings SB-18 and SB-19 were added to the scope of work from the original proposal of the work plan in order to better assess impact surrounding this subsurface structure. SB-18 was advanced to 20 feet bgs between the vault and the former waste oil UST, and SB-19 was advanced to 20 feet bgs between the vault and MW-1.

Antea proposed to attempt to open the cleanout on the line. Antea may be able to snake it to see where it runs, or visually inspect it. This may be problematic as years of rust and corrosion may have damaged the cleanout and/or line.

4.1 DISPOSAL OF DRILL CUTTINGS AND WASTEWATER

Any soil waste generated during proposed soil boring advancement will be placed into properly labeled 55-gallon Department of Transportation (DOT) approved steel drums and temporarily stored at the service station site. Samples of the drill cuttings and wastewater will be collected, properly labeled and placed on ice for submittal to a California-certified laboratory and analyzed for TPHg and TPHd by EPA Method 8015M and BTEX, and MTBE by EPA Method 8260B. Additionally, soil samples will also be analyzed for CAM 17 metals by EPA Method 6010. A chain-of-custody will accompany the samples during transportation to the laboratory. Subsequent to receiving the laboratory analytical results, the drummed drill cuttings and wastewater will be profiled, transported, and disposed of at a COP approved facility.

4.0 LIMITATIONS AND CERTIFICATIONS

This report was prepared in accordance with the scope of work outlined in Delta's contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of ConocoPhillips for the expressed purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Delta. To the extent that this report is based on information provided to Delta by third parties, Delta may have made efforts to verify this third party information, but Delta cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied, are made by Delta.

CONSULTANT: Delta Consultants

*****

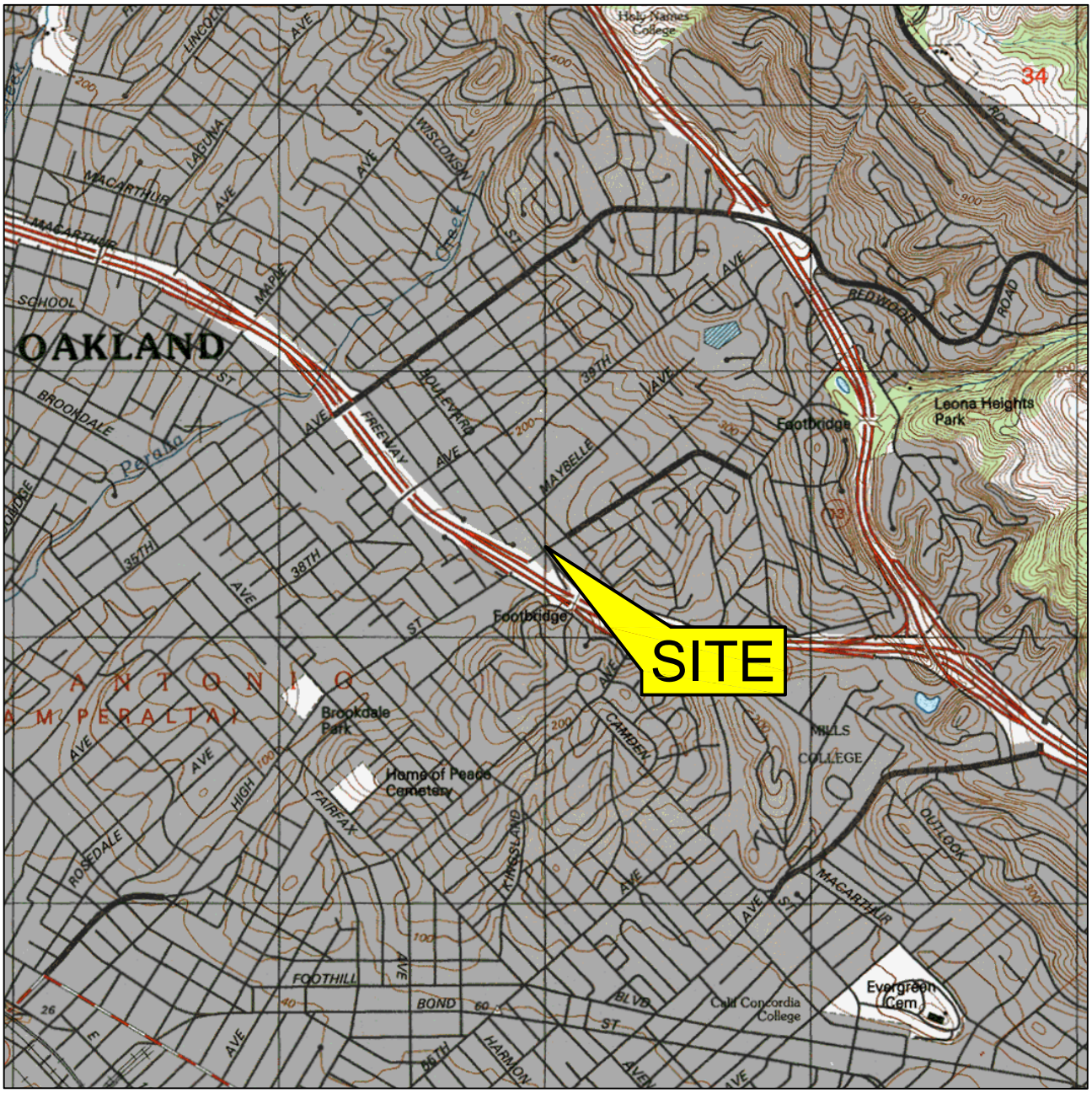
Figures

Figure 1 – Site Location Map
Figure 2 – Site Plan with Historic Sampling Locations
Figure 3 – Revised Site Plan with Current Well Locations
Figure 4 – Soil Vapor Point Construction Detail

Attachments

Attachment A – ACHCSA Letter dated November 24, 2010

FIGURES



North

FIGURE 1

SITE LOCATOR MAP

76 SERVICE STATION NO. 1156
4276 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. C101-156	DRAWN BY JH 01/24/11
FILE NO. Site Locator	PREPARED BY AB
REVISION NO.	REVIEWED BY JB

anteagroup

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, OAKLAND EAST QUADRANGLE, 1967

LEGEND

- GROUNDWATER MONITORING WELL
- ABANDONED GROUNDWATER MONITORING WELL
- TANK PIT BACKFILL WELL
- SOIL VAPOR WELL
- SOIL BORING (DELTA, 2010)
- SOIL & GROUNDWATER SAMPLE LOCATION (DELTA, 2009)
- SOIL VAPOR SAMPLE LOCATION (DELTA, 2009)
- SOIL & GROUNDWATER BORING LOCATION (DELTA, 2007)
- SOIL SAMPLE LOCATION (TOSCO, 1998)
- SOIL VAPOR SAMPLE LOCATION (PACIFIC, 1997)
- FENCE

North

0 30 FT

SCALE

FIGURE 2

SITE MAP WITH HISTORICAL SAMPLING LOCATIONS

76 SERVICE STATION NO. 1156
4276 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. C101-156	DRAWN BY JH 01/24/11
FILE NO. 76-1156S	PREPARED BY AB
REVISION NO. 2	REVIEWED BY JB

anteagroup

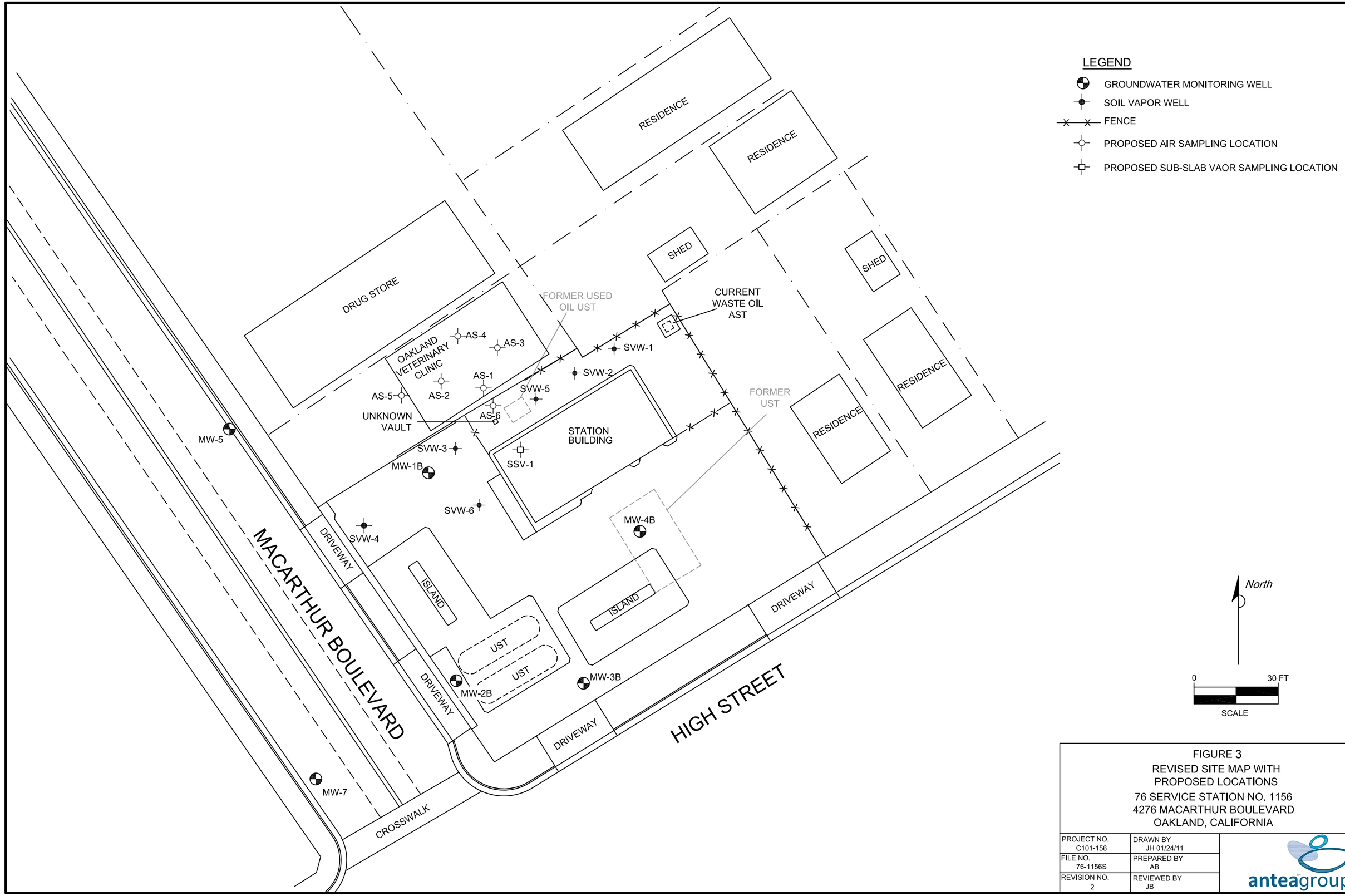


FIGURE 3
REVISED SITE MAP WITH
PROPOSED LOCATIONS
76 SERVICE STATION NO. 1156
4276 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. C101-156	DRAWN BY JH 01/24/11
FILE NO. 76-1156S	PREPARED BY AB
REVISION NO. 2	REVIEWED BY JB

anteagroup

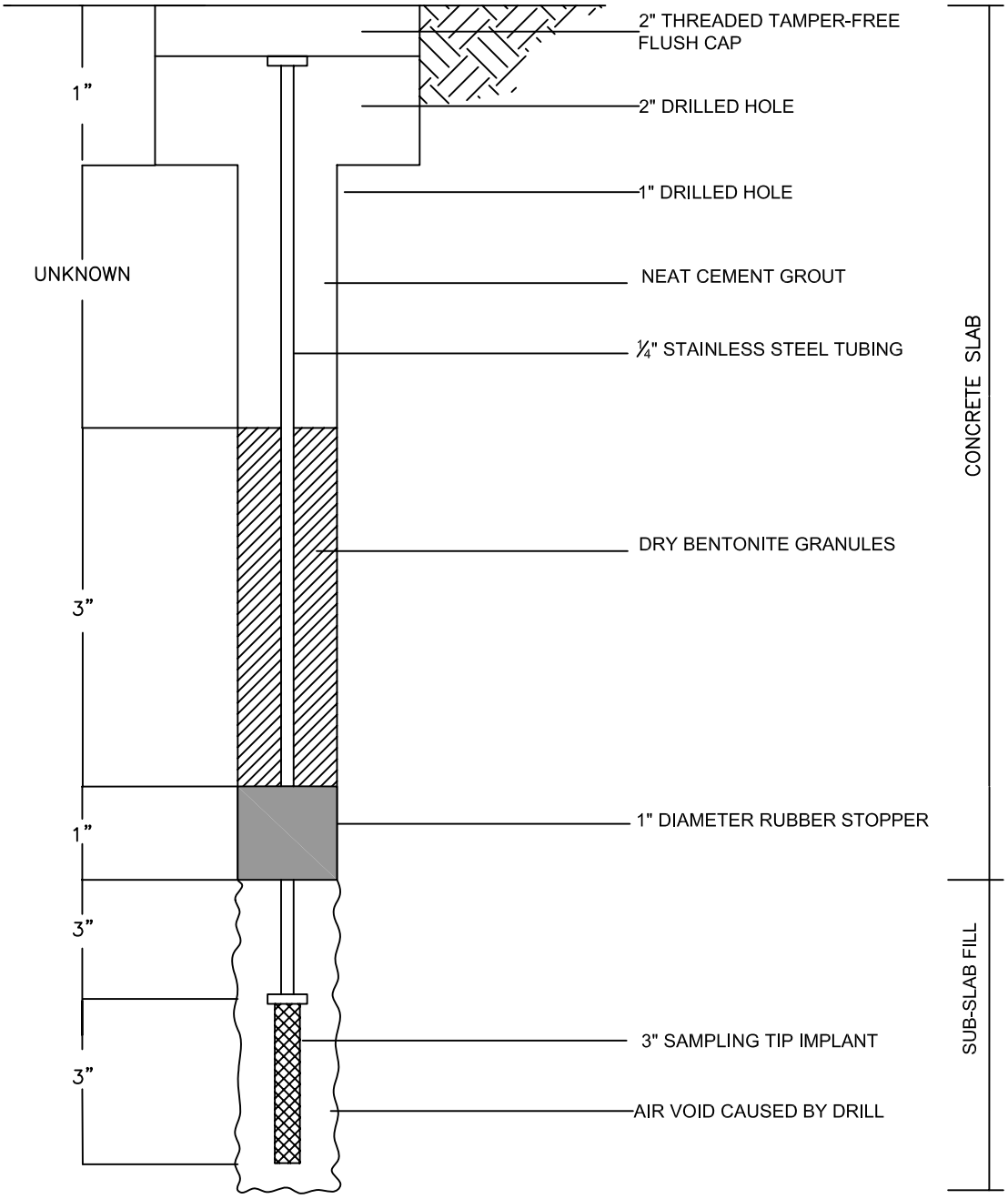


FIGURE 4

SUB-SLAB VAPOR WELL CONSTRUCTION DETAIL

76 SERVICE STATION NO. 1156
4276 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. C101-156	DRAWN BY JH 1/17/11
FILE NO. 76-1156S	PREPARED BY AB
REVISION NO. 0	REVIEWED BY JB

anteagroup

ATTACHMENT A

ACHCSA Letter Dated November 24, 2010

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

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

November 24, 2010

Bill Borgh (*Sent via E-mail to: Bill.Borgh@conocophillips.com*)
ConocoPhillips
76 Broadway
Sacramento, CA 95818

Rajan Goswamy
4276 MacArthur Boulevard
Oakland, CA 94619

Carole Quick and Lorraine Mudget
P.O. Box 2165
Gearheart, OR 97138

Subject: Review of Site Investigation Report for Fuel Leak Case No. RO0000409 and Geotracker Global ID T0600102279, Unocal #1156, 4276 MacArthur Boulevard, Oakland, CA 94619

Dear Mr. Grayson, Ms. Quick, Ms. Mudget, and Mr. Goswamy:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the recently submitted document entitled, "*Additional Assessment Report, 4276 MacArthur Blvd., Oakland, CA*," dated October 21, 2010 (Report). The Report, which was prepared on behalf of ConocoPhillips by Delta Environmental, presents results from soil vapor, soil, and groundwater sampling on site. The purpose of the proposed scope of work, which is described in a Work Plan dated March 1, 2010, was to address data gaps in the current site conceptual model. In addition, several monitoring wells with long screens were replaced with wells screened over shorter intervals.

One temporary off-site soil vapor point was proposed on the adjacent Oakland Veterinary Clinic property. This proposed off-site soil vapor point was not installed apparently due to issues that arose between ConocoPhillips and the property owner over an access agreement. Therefore, the potential for off-site vapor intrusion has not been assessed. Please see technical comment 1 below regarding the need for assessment of the potential for vapor intrusion for the adjacent property.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Site Conceptual Model and Potential for Off-site Vapor Intrusion.** One temporary off-site soil vapor point (SV-8) that was proposed on the adjacent Oakland Veterinary Clinic property, was not installed due to issues that arose between ConocoPhillips and the property owner over an access agreement. The October 21, 2010 Report indicates that once access agreement issues have been resolved, "this matter may be further assessed." Based on our review of site conditions and the soil vapor sampling data, a significantly larger scope of work than advancing one temporary soil vapor point in the Oakland Veterinary Clinic parking lot is necessary. Boring logs from several borings that have been advanced between the station building and the Oakland Veterinary Clinic describe visible contamination or strong odor in near surface soils. The ground surface slopes from the station building towards the Oakland Veterinary Clinic, providing a potential shallow migration pathway.

Shallow contamination in the area of the station building may extend to the north beneath the Clinic. Soil vapor samples collected from the area between the station building and Clinic have contained concentrations of total petroleum hydrocarbons and BTEX that exceed screening levels by several orders of magnitude. Based on these conditions, we request that the proposed scope of work be expanded to include sub-slab vapor sampling within the Oakland Veterinary Clinic to assess the potential for vapor intrusion. In order to evaluate whether shallow soil contamination extends from the site beneath the Clinic property, we request that you also propose soil borings southwest and northeast of the Clinic. Please present plans for sub-slab sampling and off-site soil borings in the Work Plan requested below. In addition, please complete the procedures necessary to obtain an access agreement to conduct the proposed work.

2. **Potential for On-site Vapor Intrusion.** We request that you propose sub-slab sampling within the southwestern portion of the on-site station building that is outside the automotive services bays. Please include plans for sub-slab sampling in the Work Plan requested below.

3. **Unidentified Concrete Vault.** Please continue efforts to identity the construction of the unidentified concrete vault. A primary objective of investigation of the unidentified vault should be to assess whether the vault is the source of elevated petroleum hydrocarbons detected in soil, soil vapor, and groundwater in the area of MW-1. We also request that you conduct a search of historic uses of the property and interview site workers to potentially identify other sources of the shallow contamination north and west of the station building.

4. **Groundwater Monitoring.** Groundwater monitoring is to be continued on a semi-annual basis during the first and third quarters. Please present the results in the Groundwater Monitoring Reports requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **January 24, 2011** – Work Plan
- **30 days following end of First and Third Quarters** – Semi-annual Groundwater Monitoring Report

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org.

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 2032 (*Sent via E-mail to: lgriffin@oaklandnet.com*)

James Barnard, Delta Environmental Consultants, Inc., 11050 White Rock Road, Suite 110 Rancho Cordova, CA 95670 (*Sent via E-mail to: JBarnard@deltaenv.com*)

Denis Brown, Shell Oil Products US, 20945 S. Wilmington Ave., Carson, CA 90810-1039 (*Sent via E-mail to: denis.l.brown@shell.com*)

Peter Schaefer, Conestoga-Rovers & Associates, 5900 Hollis Street, Suite A Emeryville, CA 94608 (*Sent via E-mail to: pschaefer@craworld.com*)

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)

GeoTracker, File

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT REQUESTS

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.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** July 20, 2010
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i. Send an e-mail to dehloptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      i. Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to dehloptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.