Work Plan for Soil Vapor Sampling and Backfill Soil Sampling:
Former Gas Station
2547 East 27th Street
Oakland, California

Date:
November 7, 2007

Prepared for:
Tomorrow Development
1305 Franklin Street, Suite 500
Oakland, California

Submitted to:
Jerry Wickham
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway
Alameda, California

Prepared by:
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Perjury Statement

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.

Ted Dang, President

7/12/06
Date

424 First Street
Benicia, California 94510
707 748-3170

November 7, 2007

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

Subject: Request for Work Plan, Former Gas Station, 2547 East 27th Street, Oakland, California (File No. 0396)

Dear Mr. Wickham:

Ceres has prepared this work plan to address the comments provided by the ACHCSA agency in a letter dated October 4, 2007 for the site located at 2547 East 27th Street, Oakland, California ("Property").

The ACHCSA desires to confirm that future residential occupants will not be adversely impacted by potential vapor intrusion of subsurface contaminants. Further, ACHCSA is concerned about the quality of the imported fill materials used to backfill the former excavations. Further, several comments regarding the Revised Excavation Report were made, and are commented on herein.

Tomorrow Development and Ceres Associates request that the ACHCSA review and approve the enclosed Work Plan. If you have any questions or comments, please contact Ryan Meyer at (707) 748-3170 or via email at ryanmeyer@ceresassociates.com.

Sincerely,
Ceres Associates

Ryan Meyer, R.E.A.
Project Manager

Kimberly A. Brandt, R.G., C.HG.
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cc: Ted Dang
Tomorrow Development
1305 Franklin Boulevard
Oakland, California

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1.0 INTRODUCTION

The Property is located at 2547 East 27th Street, Oakland in Alameda County, California *(refer to Figure 1 – Topographic Map)*. The Property was formerly occupied by a fuel and service station between 1927 and 1994. In 1994 the fuel and service station was demolished and the Property is currently unoccupied. A chain-link fence is present at the perimeter to secure the Property. The Property is periodically used for storage of building materials for nearby construction sites. The Property is located among single- and multiple- family residences.

In 1994, one 100-gallon waste oil underground storage tank (UST) and four 500-gallon gasoline USTs were excavated and removed from the Property. The 500-gallon USTs reportedly contained gas and diesel. After the USTs were removed, the excavation pits were lined with visqueen plastic and backfilled with the excavated material.

This work plan addresses proposed soil vapor sampling and backfill soil confirmation sampling as requested by the ACHCSA in their letter, dated October 4, 2007.

The regulatory risk criteria utilized in this report are Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for residential sites where groundwater IS a potential or current drinking water source.

1.1 General Comments

Ceres Associates would like to present our response to general comments in the October 4, 2007 letter from the ACHCSA. Comments will be addressed according to their number in the letter:

Comment 1: Figures
Ceres Associates has corrected the incorrect figures, making all figures consistent with historic maps drawn for the Property by other consultants. This includes placement of the former USTs underneath a portion of the sidewalks. The incorrect figures will be changed in this and all future site documents.

Comment 2: Typographical Error
Ceres Associates has fixed the typographical error located in the "Recommendations" section of the Aqua Science Engineers 1994 report.

Comment 3: ACHCSA Comments regarding Contaminated Backfill
Comment noted.

Comment 4: Depth of Excavation
Ceres Associates confirms that the depth of all excavations was to approximately 9.5 feet below ground surface.

Comment 5: Imported Fill Materials

Because the imported fill material was not sampled prior to use as backfill on the Site, Ceres is proposing to conduct in-place soil sampling of the import fill used as backfill during the 2007 remediation activities. It is known by Ceres that this soil was obtained from an undeveloped site in Milpitas, California. In accordance with DTSC guidance documents, Ceres has developed a soil sampling plan that will assess the quality of the imported fill material. This plan is discussed further in Section 5.0 of this work plan.

Comment 6: Confirmation Soil Samples

It is not clear why samples submitted for analysis (those listed in Tables 7 and 8) included results of up to 600 milligrams per Kilogram (mg/Kg) of total petroleum hydrocarbons as gasoline (TPHg) when a headspace method PID analysis resulted in 0 parts per million (ppm). However, it is possible that given the nature of the weather in early December, that air temperatures were relatively low, thereby reducing volatilization rates. Though samples were warmed by placing the sample bags on the warmed hood of a truck, it is possible that the samples were not warmed sufficiently to adequately volatilize organic compounds.

Further, during subsequent sampling at the Property the ACHCSA noted that although higher PID readings were detected in the soils around 2.5 feet bgs, Ceres Associates submitted only the 5 and 10 foot bgs samples for analysis. This was because the variation among PID analysis was not significant and Ceres Associates desired to present a uniform sampling schematic which would demonstrate the site characteristics at similar depths.

To further assess potential residual target contaminants, Ceres Associates has prepared the enclosed work plan for Soil Vapor Sampling per the ACHCSA requirements. The purpose of the soil vapor sampling is to assess if chemical vapors are present in the sol that may potential impact future site residents.

Comment 7: Tables

Ceres Associates, in desiring to make a cleaner, more readable table, incorporated all cells that were reportedly similar by the laboratory. It appears that the effort was received with mixed results, therefore to correct any potential uncertainties, Ceres Associates has modified those tables and has presented copies of them in Appendix – Revised Tables.

Comment 8: Soil Manifests

The excavated material was off-hauled as Non-Hazardous waste. The material was TPH impacted, and the landfill designated it as such because of the TPH values. However, Ceres Associates is not aware of any data to suggest that the material was impacted with metals. Ceres Associates has provided the ACHCSA with all data collected at this site, and specifically with the composite sample results that were reported by the laboratory for the material disposed at the landfill.

The stockpiled soil was sampled for TPHg, TPHd, TPHmo, BTEX, and LUFT 5 metals. The results of that sampling, as reported in the Revised Soil Excavation Report are noted below.

Composite Sample of Stockpiled Soil

(reported in milligrams per kilogram, mg/Kg)

Sample	TPHg	TPHd	TPHmo	Ethylbenzene	Xylenes	Chromium	Lead	Nickel	Zinc
S-1-4	140	33	9.8	0.099	0.27	45	48	51	110

The reported concentrations fall below the metals criteria (CCR Title 22) used by the landfill, therefore the soil that was disposed off site was not impacted with metals.

Comment 9: Soil Vapor Sampling

This work plan presents the requested soil vapor sampling work plan which is further described in Section 4.0.

Comment 10: Groundwater Monitoring

Ceres Associates will modify the groundwater sampling parameters accordingly for future groundwater monitoring events.

Comment 11: Groundwater Monitoring Report Figures

Ceres Associates will post the groundwater elevations next to each monitoring well on future Quarterly Monitoring Reports, Figure 3. Additionally, Ceres Associates will discuss the potential for a groundwater depression around MW-4 in the Third Quarter 2007 Quarterly Monitoring Report, due to the ACHCSA by November 10, 2007.

2.0 SITE CHARACTERISTICS

2.1 Geologic/Hydrogeologic Setting

Based upon geologic maps, the Property is underlain by Pleistocene alluvial fan deposits (Helley & Graymer, 1997). The Property lies at approximately 115 feet above mean sea level. The local topography slopes to the south-southeast.

2.2 Soil

The soils on the Property consist of generally sandy gravel fill from the surface to four (4) feet below ground surface (bgs). From four (4) feet to twelve (12) feet bgs the soil appears to consist of silty clays. Between twelve (12) feet and fifteen (15) feet bgs the soil is generally gravel and sand with some clay. At depths greater than fifteen (15) feet to a depth of twenty-seven (27) feet bgs, the soils are primarily clay with some silts, sands, and gravels.

Further, imported fill materials were used to backfill the excavations that occurred in November/December 2006. The bottom approximately three feet of the fill consisted of quarry fines supplied by Curtner Quarry of Milpitas California. This material is the sifted, primarily mineral component from a rock quarry. According to the Curtner Quarry, the fines have a maximum diameter of 9.50 millimeters (0.375 inch), and have at least 50% under 0.3 millimeters (0.012 inches). The quarry fines were compacted using a back-hoe and a "sheeps-foot" compaction attachment on an excavator. The compacted material was then overlain with Mirafi 140N non-woven, polypropylene, 55 mil thickness, geo-textile fabric. The placement of the fabric creates a barrier so that the fill soil placed on top of will be less likely to subside. Clean fill soil from undeveloped land was also acquired from Curtner Quarry to fill the remaining portion of the excavation. The fill material was brought onto the Property then spread out on top of the fabric. At approximately every 18 to 24 inches, the fill material was compacted in the same manner as described above for the quarry fines. A total of 380 tons of soil and base rock were brought on-site for backfill purposes.

2.3 Groundwater

Groundwater has been encountered on the Property between approximately three (3) and fourteen (14) feet bgs. Groundwater elevations are generally within three (3) to five (5) feet of the ground surface. The variable groundwater elevations across the Property suggest the possibility of a perched groundwater lense.

The groundwater flow direction, based upon historic quarterly monitoring events by Ceres Associates, ranges from east-northeast to south-southeast, with an overall trend toward the southeast, with a gradient of 0.006 ft/ft.

3.0 PREVIOUS PROPERTY INVESTIGATIONS

Several investigations and remedial actions have been conducted at the Property. The following section summarizes those investigations and actions.

3.1 Previous Soil and Groundwater Sampling

Soil and groundwater contamination at the Property appears to have originated from historic uses of underground storage tanks for the purposes of storing gasoline and diesel fuel and waste oil *(refer to Figure 2 – Previous USTs and Developments).* The Property has been the subject of several previous assessments, including:

- Tank Removal Report, September 1994, Aqua Science Engineers
- Phase I ESA, May 2001, M.L. River Group
- Soil and Groundwater Sampling, August 2002, Kleinfelder
- Soil and Groundwater Sampling, January 2005, Ceres Associates
- Soil and Groundwater Sampling and Monitoring Well Installation, February 2006, Ceres Associates
- Well Survey, May 2006, Ceres Associates
- Deeper Groundwater Sampling, October 2006, Ceres Associates
- Quarterly Groundwater Monitoring, 2006 – 2007, Ceres Associates
- Revised Soil Excavation Report, August 2007, Ceres Associates

Based upon previous soil and groundwater sampling events at the Property, the following target compounds have been identified:

Compound	**Abbreviation**
Total Petroleum Hydrocarbons as Gasoline	TPHg
Total Petroleum Hydrocarbons as Diesel	TPHd
Total Petroleum Hydrocarbons as Motor Oil/Hydraulic Oil	TPHmo/ho
Benzene	Collectively, BTEX
Toluene	
Ethylbenzene	
Xylenes	

3.2 September 1994 Aqua Science Engineers – Tank Removal Report

An Underground Storage Tank Removal Report, dated September 15, 1994, was prepared for the Property by Aqua Science Engineers, Inc. According to the report four 500-gallon and one 100-gallon steel underground storage tanks were removed form the Property on August 30 and 31, 1994

(refer to Figure 2 – Previous USTs and Developments. All four of the 500-gallon tanks were reported to have contained gasoline; the 100-gallon tank was reported to have contained waste oil.

Soil Sample Results

Soil samples collected from the bottom of the excavations indicated detectable concentrations of TPHg and BTEX *(refer to Table 1: Soil Sampling during UST Removal – August 1994).* Detectable concentrations of oil and grease were identified in the soil directly beneath the former waste oil tank. Concentrations ranged from a low of 0.2 mg/Kg to a high of 930 mg/Kg of TPHg beneath the four former gasoline USTs. There were no detectable concentrations of petroleum hydrocarbons found beneath the former pump islands.

Upon completion of the soil sample collection, the excavations were lined with visqueen plastic and backfilled immediately with the stockpiled material. According to the report, this re-filling was meant only as a temporary measure and this plan was verbally discussed at the time and approved by Mr. Barney Chan of the ACHCSA.

Recommendations

Aqua Science Engineers, Inc. recommend removal and stockpiling of the material that had been placed back into the excavations as temporary backfill; collecting samples and analyzing for profiling and acceptance into an off-site recycling facility, then off-hauling; over-excavating, stockpiling and sampling the residual contaminated soil; backfilling the excavation with clean, imported, compactable material to grade; and, conducting subsurface soil and groundwater investigations as requested by local the regulatory agency.

3.3 May 2001 M.L. River Group – Phase I ESA

A Phase I ESA report, dated May 10, 2001, was conducted for the Property by M.L. River Group Environmental Consultants. According to the report, the Property was first developed sometime between 1900 and 1920, and was operated as a gasoline and/or garage from 1927 through 1994. At the time of the report, the Property was vacant and no structures or building materials remained on the site.

Neither hazardous materials nor electrical transformers were observed on the Property. However, the report did summarize the above referenced UST Removal Report, noting that soil sampling conducting during the UST removal indicated subsurface contamination.

No further site study or remediation had been done at the Property between the time of the tank removal and the preparation of this Phase I ESA Report. The case had been referred to the Alameda County District Attorney's Office shortly before the Phase I ESA's publication. Prior to granting closure for the site, the ACHCSA reportedly required remediation of the contaminated soil and additional studies of the soil and groundwater. The Phase I ESA report concluded that "soil remediation and subsurface investigation of the Subject Site must be performed before redeveloping the Property".

3.4 August 2002 Kleinfelder- Soil and Groundwater Sampling

A Soil and Groundwater Sampling report, dated August 2, 2002, was prepared for the Property by Kleinfelder. The report cited the Phase I history noted above. Kleinfelder advanced three soil borings (EB-1, EB-2 and EB-3) on the Property on June 19, 2002 *(refer to Figure 3 – Boring Location Map).* At that time, monitoring wells were installed in each of the three borings. According to the boring logs (refer to Appendix for a copy of the boring logs), between two and five feet of screen was inserted into the borings and the remainder of the borings were backfilled with grout. These wells are no longer operational.

Soil Sample Results

According to the report, reported concentrations of TPHg, TPHd, TPHmo and BTEX compounds were detected in at least one of the soil samples collected from each soil boring exceeding State of California Regional Water Quality Control Board Risk Based Levels (RBSL) *(refer to Table 2: Kleinfelder Soil and Groundwater Sampling - June 2002).* TPHg was detected at 1,200 mg/Kg in EB-1 and 1,800 mg/Kg in EB-2. TPHd was detected at 650 mg/Kg in a soil sample collected from EB-1 and 1,500 mg/Kg in a soil sample collected from EB-2. TPHmo was detected in concentrations above laboratory reporting limits only in the soil sample from boring EB-1 at 14 mg/Kg. Further, the laboratory described the detected TPHg as strongly aged gasoline, and the TPHd was described as Stoddard solvent. A soil sample collected from EB-1 had reported concentrations of ethylbenzene at 1.6 mg/Kg, toluene at 0.62 mg/Kg, and xylenes of 3.3 mg/Kg. A soil sample collected from EB-2 had reported concentrations of ethylbenzene at 3.1 mg/Kg and xylenes at 4.9 mg/Kg. Concentrations of MTBE were not reported above the method reporting limit for any of the soil samples submitted for analysis.

Groundwater Sample Results

Groundwater samples were collected from each of the three groundwater monitoring wells. The groundwater samples reportedly to contained concentrations of TPH in each of the three groundwater wells. TPHd was reported in monitoring well EB-1 at a concentration of 56 micrograms per liter (µg/L). The groundwater sample collected from monitoring well EB-2 was reported to contain TPHg at 82 µg/L, TPHd at 360 µg/L, and TPHmo at 310 µg/L. A groundwater sample from monitoring well EB-3 reportedly contained concentrations of TPHd at 270 µg/L and TPHmo at 540 µg/L. Only EB-2 had reported concentrations of BTEX compounds. This well had concentrations of benzene at 0.97 µg/L, toluene at 1.3 µg/L, and xylenes at 1.3 µg/L. Ethylbenzene and MTBE were not reported above their laboratory reporting limits.

Recommendations

Kleinfelder recommended conducting further soil and groundwater sampling to determine the extent of soil contamination and to confirm the groundwater results from their initial study. Kleinfelder suggested a program of shallow drilling in a grid pattern in order to help delineate the extent of the impacted soil and that additional groundwater samples be collected to further study the potential impacts to groundwater.

3.5 January 2005 Ceres Associates – Soil and Groundwater Sampling

To further access the extent of soil and groundwater impacts at the Property, Ceres Associates collected soil and groundwater samples on January 7, 2005 (project CA1264-1, dated January 28, 2005) *(refer to Figure 3 – Boring Location Map)*. Ten (10) soil borings were drilled at the Property to a maximum depth of 10 feet bgs (labeled SB-1 through SB-10); soil samples were collected at five and 10 feet bgs from each boring. Additionally, grab groundwater samples were collected from soil borings SB-1 through SB-10, as well as from six Hydro-punch® borings (labeled GW-1 through GW-6).

Soil and grab groundwater samples were analyzed for TPHg, TPHd, BTEX, and MTBE *(refer to Table 3: Ceres Associates Soil and Groundwater Sampling – January 2005)*.

Soil Sample Results

The only soil samples from five (5) feet bgs that were reported to contain concentrations of the target analytes above reporting limits were collected from soil boring SB-6, and had reported concentrations of benzene of 0.024 mg/Kg and ethylbenzene of 0.031 mg/Kg; and SB-9 which had reported concentrations of TPHg of 32 mg/Kg, TPHd of 52 mg/Kg, ethylbenzene of 0.017 mg/Kg, and xylenes of 0.013 mg/Kg.

The 10 foot bgs samples tended to have higher concentrations of the target analytes, although the 10 foot samples from SB-1, SB-2, and SB-8 were reported by the laboratory to not contain concentrations of the target analytes above their respective reporting limits. The highest concentrations of the target analytes were reported as 61 mg/Kg of TPHg (sample SB5-10), 46 mg/Kg of TPHd (sample SB5-10), 0.007 mg/Kg of benzene (sample SB5-10), 0.045 mg/Kg of ethylbenzene (sample SB5-10), and 0.027 mg/Kg of xylenes (sample SB5-10).

Although target analytes were detected in several of the analyzed soil samples, the reported concentrations of the target analytes in the soil samples analyzed from soil borings SB-1 through SB-10 did not exceed San Francisco Regional Water Quality Board's Environmental Screening Limits (ESLs).

Groundwater Sample Results

Target analytes were reported above method reporting limits in all but one of the grab groundwater samples. Concentrations of TPHg were as high as 90,000 μg/L (SB-9); 750,000 μg/L for TPHd (SB-9); 140 μg/L for benzene (SB-9); 1.5 μg/L for toluene (SB-1: note, however, that the result for SB-9 was reported as ND<50); 77 μg/L for ethylbenzene (SB-9); and 20 μg/L for xylenes (SB-6: note, however, that the result for SB-9 was reported as ND<50). MTBE was not reported above the method limits in any grab groundwater samples.

Benzene concentrations exceeded the regulatory limit of 1 μg/L in eight of the 16 samples submitted for analysis, set by the State of California Department of Health Services (CDHS) Maximum Contaminant Level (MCL). While the CDHS has not created MCLs for TPHg and TPHd, the RWQCB had established an ESL for both TPHg and TPHd of 100 μg/L.

Recommendations

Based on these results, Ceres Associates recommended the installation of additional monitoring wells both on and off the Property to help define the limits of contamination and to assess groundwater flow direction. This additional work was conducted in February 2006.

3.6 February 2006 Ceres Associates – Soil and Groundwater Sampling

Ceres Associates collected on and off-site soil and groundwater samples on February 16 and 17, 2006 (Ceres Associates Project # CA1264-3, dated February 28, 2006, revised July 2006). A total of 14 borings were advanced on and off the Property in an effort to confirm the concentrations of contaminants on the Property as well as assess off-site migration of target compounds (labeled SB-11 through SB-24). These borings were advanced to between 8 and 20 feet bgs *(refer to Figure 3 – Boring Location Map)*. Soil samples were collected every two feet, and one grab groundwater sample was collected from each boring.

Though all samples were submitted to the laboratory, only three soil samples and the one grab groundwater sample from each boring were analyzed for target compounds. The soil samples were chosen for analysis according to observed field conditions (odors, colorations, capillary fringe location, and PID readings). Samples were analyzed for TPHg, TPHd, TPHmo, TPHho, VOCs, and lead *(refer to Table 4: Ceres Associates Soil and Groundwater Sampling – February 2006)*.

Groundwater Monitoring Well Installation

Additionally, Ceres Associates installed five groundwater monitoring wells (MW-1 through MW-5) and one extraction well that was intended for potential future remediation purposes (EX-1) *(refer to Figure 4 – Monitoring Well Location Map)*. These wells were placed in locations anticipated to be have been impacted by the former use of the Property. The groundwater monitoring wells were installed to 15 feet bgs, with screened intervals between 5 and 15 feet bgs (except for MW-2: installed to 8 feet bgs, with screened interval between 3 and 8 feet bgs. MW-2 as stopped at this depth because of what the drill rig operator said was subsurface concrete obstruction). The extraction well was similarly installed to 15 feet bgs, with a screened interval between 5 and 15 feet bgs.

Soil Sample Results

Laboratory results indicated that target analyte concentrations in soil samples fell below the Residential ESL for TPHg and TPHd in all but two samples: SB12-14 at 250 mg/Kg of TPHg and SB21-12 at 490 mg/Kg of TPHd. Concentrations of TPHg in soil samples ranged from ND to 250 mg/Kg (SB12-14); concentrations of TPHd in soil samples ranged from ND to 490 (SB21-12); and, concentration of TPHho or TPHmo in soil samples ranged from ND to 38 mg/Kg (SB20-12). Concentrations of BTEX compounds were not reported by the laboratory above the method reporting limits, except for one sample (SB14-14) at 0.0074 mg/Kg. Other VOCs were not reported above the method reporting limits for submitted soil samples. Lead concentrations were reported by the laboratory to range from ND to 51 mg/Kg.

Grab Groundwater Sample Results

Grab groundwater sampling results indicated that hydrocarbon-affected groundwater was detected off-site, east of the Property, in most of the sample points advanced by Ceres Associates during this sampling event. Concentrations of TPHg above the method reporting limits were only reported in three grab groundwater samples: 1,500 µg/L in SB-21 (on the Property), 74 µg/L in SB-14 (east of the Property), and 51 µg/L in SB-19 (south of the Property). However, points between these sample locations were not reported above ND. The highest concentrations of TPHd were reported off-site at SB-22 at 3,600 µg/L immediately south of the Property; and at SB-13 at 1,300 µg/L, east of the

Property. On-site TPHd contamination was reported as high as 910 µg/L at SB-21 located along the southern boundary of the Property. Samples further south and east of SB-21 were also reported above ND at concentrations exceeding the ESL for TPHd. Concentrations of TPHmo (motor oil and hydraulic oil) were detected both on and off-site (SB-13, SB-15, SB-17, SB-20, and SB-22). Concentrations of these target analytes were generally higher than the concentrations reported for TPHg or TPHd, with highest concentrations detected at 28,000 µg/L of TPHmo in SB-22. Concentration of VOCs were not reported by the laboratory of their respective method reporting limits. Concentrations of lead were reported by the laboratory between ND and 17 µg/L.

Based on the results it was concluded that on-site contamination of petroleum hydrocarbons in groundwater had migrated off-site, down-gradient of the Property, in a generally easterly direction. Concentrations of petroleum hydrocarbons were reported above the ESL in groundwater samples collected as much as 100 feet down-gradient of the Property. The relatively high concentrations of petroleum hydrocarbons were not accompanied by high concentrations of BTEX compounds or fuel oxygenates. In fact, fuel oxygenates EDB and 1,2-DCA were reported as ND for all grab groundwater and soil samples submitted to the laboratory. Concentrations of BTEX compounds fell below the Maximum Contaminant Levels (MCLs) in all grab groundwater samples collected (SB-11 through SB-24).

Monitoring Well Sample Results
Samples were not collected from the monitoring wells during this sampling event; however, groundwater samples were collected as part of quarterly groundwater monitoring activities *(see Quarterly Groundwater Monitoring Summary below for further information regarding the results of such sampling).*

Recommendations
Based on the concentrations of the target analytes detected during this investigation, it was recommended that one deeper boring be advanced to 40 feet bgs to assess potential vertical contamination migration, preparing a corrective action plan, and preparing a risk assessment. This work was completed in October 2006.

3.7 May 2006 Ceres Associates - Well Survey

Ceres Associates prepared a well survey, dated May 15, 2006 (Ceres Associates project CA1264-3). The ACHCSA requested that the well survey be conducted in a letter to Tomorrow Developed, dated October 3, 2005. The survey was conducted to locate groundwater wells within a 2,000-foot radius of the Property. Ceres Associates collected data from the State of California Department of Water Resources, the Alameda County Public Works Agency, and from the City of Oakland Public Works Department.

A total of 19 wells were identified in the search area, generally located between 1,000 and 2,000 feet from the Property. The Property is located to the west of Sousal Creek; however, all of the wells identified within the search radius are located east of Sousal Creek.

The report included figures and supporting documents regarding the identified wells. Recommendations were not made in the report, as the well survey was meant to compliment other on-going investigation reports.

3.8 October 2006 Ceres Associates - Deeper Groundwater Sampling

Ceres Associates advanced one deeper soil boring (SB25) on the Property to 27 feet bgs on September 20, 2006 *(refer to Figure 3 – Boring Location Map).* SB25 was placed in close proximity to extraction well EX-1. The sampling was conducted per the request by the ACHCSA in a letter dated May 18, 2006. The purpose of this boring was to assess soil statigraphy beneath the Property and to collect depth-discrete grab groundwater samples to assess the vertical extent of affected groundwater at the site.

Although the initial request by ACHCSA was to sample to 40 feet bgs, the Geoprobe® 6600 met with refusal at 27 feet bgs. Other attempts were made in nearby locations (still on the Property) to exceed this depth, however these attempts were unsuccessful and also resulted in shallow borings.

Continuous soil cores were collected during the advancement of SB-25 and analyzed in the field for potential depth-discrete groundwater sampling points. Based upon the soil data, a higher permeability soil (clayey sands and sandy clay with moderate gravel content) was observed at approximately 13 and 21 feet bgs. Each of these areas of higher permeability soil were sandwiched between lower permeability soils (generally clays). Hydro-punch® was used to collect grab groundwater samples from these depth-discrete locations.

The groundwater samples collected were submitted to the laboratory for analysis of TPHg, TPHd, TPHmo, MTBE, and BTEX constituents *(refer to Table 5: Ceres Associates Deeper Groundwater Sampling – September 2006).* Soil samples were not requested in the May 18, 2006 letter from ACHCSA, therefore they were not collected.

Groundwater Sample Results

The results of the groundwater sampling indicated that only one concentration of target analytes was reported above the method reporting limits: 0.84 µg/L of benzene at 21 feet bgs. This result falls below the Residential ESL of 1 µg/L for benzene. Other sample analytes at both 13 and 21 feet bgs were not reported above the method reporting limits by the laboratory. The results of the deeper groundwater sampling were included in the quarterly monitoring report, dated October 27, 2006.

3.9 Revised Soil Excavation Report

To address the contaminated soil remaining at the site, Ceres proposed to excavate and off-haul the affected soil. At the direction of the ACHCSA, an interim CAP was prepared to remove the contaminated soil (considered a source of petroleum hydrocarbon contamination) and replace with imported fill materials. Excavation activities to remove the contaminated backfill materials and other affected soils were completed on December 1 and 2, 2006. A total of approximately 200 cubic yards of contaminated soil was excavated and removed from the Property.

The excavation removed affected soils in three excavations (areas I, II, and III), with the exception of two sidewalls in excavation I. Laboratory sample results from the excavations were reported below the ESL for target compounds in those remaining sidewalls of excavation area II and III.

Two sidewall samples indicated concentrations of target compounds above the ESLs remained in place in area I. Concentrations of TPHg were reported at 450 mg/Kg in sample I-9-W and at 600

mg/Kg in sample I-9-N. Further, concentrations of TPHd were reported at 420 mg/Kg in sample I-9-N. These concentrations exceed the ESL of 100 mg/Kg. Other samples and/or analytes were not reported above their respective ESLs. However, further excavation in area I was not feasible given site constraints. The sidewall area of sample I-9-W could not feasibly be excavated further because it is adjacent to the public sidewalk of east 27th Street, and would have caused undermining; and, the sidewall area of sample I-9-N could not feasibly be excavated further due to shallow groundwater intrusion issues and stabilization of the excavation wall.

The ACHCSA expressed concern over the extent of excavations and their effectiveness with respect to source removal. Based upon this, Ceres Associates advanced a total of eight borings on the Property to confirm that the excavations were effective in remediating source material both horizontally (in areas I and III) and vertically (all areas), these borings were labeled CS-1 through CS-8.

Vertical Delineation

Each excavation was extended to 9.5 feet bgs. For each excavation area, one confirmation soil sample (conducted as part of the subsequent soil sampling) was collected at approximately 10 feet bgs from near the center of each excavation, in undisturbed soil (not imported fill materials). These samples were meant to reflect the "floor" of the December 2006 excavations. According to the laboratory, target analytes [TPHg, TPHd, TPHmo, and BTEX] were not reported above the method reporting limits for these samples. It would appear that the vertical extent the excavations was sufficient for effective source removal.

Horizontal Delineation - Area I

Ceres Associates collected two soil samples from one boring (CS-5) placed within three feet of former sample I-9-N. These two samples were analyzed for TPHg, TPHd, TPHmo, BTEX, and LUFT 5 metals. Only chromium, nickel, and zinc were reported above the method reporting limits; however, the reported concentrations were within anticipated background levels. Given these results, it would appear that the horizontal extent of area I was sufficient to remove affected material.

The area of I-9-W is adjacent to an impervious surface in the form of a sidewalk and roadway, therefore it is not anticipated that any residual contamination would adversely impact future surface occupants.

Although petroleum hydrocarbons were identified at slightly elevated concentrations during the excavation and subsequent confirmation sampling, the more volatile compounds (BTEX compounds) were not identified above the ESLs. Further, concentrations of target compounds are not expected to pose a significant soil vapor intrusion risk to future buildings on the Property, based upon a comparison of soil and groundwater concentrations reported on-site to published screening levels. Residual contaminants were anticipated to naturally attenuate over time to concentrations below the ESLs.

Horizontal Delineation - Former Waste Oil Area

The ACHCSA requested additional analysis of the outer walls of excavation Area III, where a former waste-oil UST was located. In complying with the ACHCSA request, the laboratory analyzed the samples submitted from CS1 through CS4 (the 5 and 10-foot sample for each boring) for oil and grease, chlorinated hydrocarbons, 1,4-dioxane, EDB, EDC, MTBE, TAME, ETBE, DIPE, TBE,

ethanol, LUFT 5 metals, PCBs, and PNAs. The laboratory did not report concentrations above the method reporting limits for these specified analytes, except for 5.9 mg/Kg of TPHmo at 5 feet bgs in CS-4 (the southwest wall of excavation Area III). That concentration is below the Residential ESL of 500 mg/Kg for TPHmo. It would appear that the removal of source material in Area III was effective and sufficient.

3.10 August 2006 to April 2007 Ceres Associates - Quarterly Groundwater Monitoring Results

Ceres Associates has monitored the six groundwater monitoring wells on the Property (five groundwater monitoring and one extraction) since their installation in February 2006. Wells MW-1, MW-2, MW-3, MW-4, MW-5, and EX-1 have been sampled five times: August 2006, November 2006, January 2007, April 2007, and July 2007 *(refer to Figure 3 – Boring Location Map).* These wells have been sampled using low-flow purging/sampling methods.

Samples have been analyzed for various fuel and fuel related compounds, including TPHg, TPHd, TPHmo, MTBE, and BTEX using US EPA methods 8015 and 8021 *(refer to Table 6: Ceres Associates Quarterly Groundwater Monitoring – August 2006 to April 2007).* The ACHCSA requested additional compound analysis for samples collected during the Second Quarter 2007 sampling event (per the April 26, 2007 letter to Tomorrow Development) as follows: 1,2-dibromoethane(EDB), ethylene dichloride (EDC), MTBE, tert-amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE), di-isopropyl ether (DIPE), Tertiary Butanol (TBA), chlorinated hydrocarbons, carbon tetrachloride, ethylene dichloride, methylene chloride, tetrachloroethane, trichloroethylene, and chloroform. These additional analytes were reported as ND by the laboratory for the groundwater samples submitted for analysis. Among the new compounds that were required by the ACHCSA during the Second Quarter 2007, only chloroform was detected above the method reporting limits. The only "new" analytes detected were in MW-2 at a concentration of 23 µg/L chloroform, 0.51 µg/L of bromoform, 0.55 µg/L of dichlorobromomethane, and 1.5 µg/L of bromochloromethane.

The source of VOCs in MW-2 is not known. MW-1, located between the Property and MW-2, did not have concentrations of these compounds above the method reporting limits. MW-2 is screened between 3 and 8 feet bgs, in an area of the soil horizon dominated by subsurface utility trenches and lines. It is possible that these minor VOC concentrations are a result of small releases associated with these utility lines, and not that of the Property.

Based upon the five quarters of quarterly groundwater monitoring, elevated concentrations of target compounds in on-site groundwater are generally limited to monitoring well EX-1. Only the two wells closest to the Property, MW-1 and MW-2, have had groundwater sample results reported by the laboratory above the method reporting limits for target analytes TPHg, TPHd, TPHmo, ethylbenzene and xylenes. The highest concentrations of target analytes reported by the laboratory for quarterly groundwater monitoring are in EX-1 at 2,200 µg/L of TPHg *(exceeding the ESL of 100 µg/L)*; 800 µg/L of TPHd *(exceeding the ESL of 100 µg/L)*; 270 µg/L of TPHmo *(exceeding the ESL of 100 µg/L)*; 1.0 µg/L of benzene; 3.9 µg/L of ethylbenzene; and 3.2 µg/L of xylenes. When were these concentrations detected Concentrations of toluene and MTBE have not been reported in groundwater monitoring wells above the method reporting limits. Isoconcentration maps have not been generated for this site because of a lack of data points (no more than two data points are available for any given analyte and date).

There has been an overall decrease in target analyte concentrations over time. This is likely attributable to the remove of source material in December 2006 as well as natural attenuation. We expect these concentrations to continue to decline over time.

4.0 PROPOSED SOIL VAPOR SAMPLING

The ACHCSA has requested that soil vapor sampling be conducted at the Property to confirm apparent results of soil and groundwater sampling already conducted (refer to ACHCSA letter, dated October 4, 2007) and to assess potential impacts to future site residents.

4.1 Soil Vapor Sampling

The ACHSA requested that soil vapor samples be collected from two locations within the footprints of each of the two planned residences. However, to have adequate coverage across the site, Ceres Associates proposes to collect a total of six soil vapor samples, three from the footprint of each planned residence *(refer to Figure 5 – Proposed Soil Vapor and Backfill Soil Sampling Map).*

Samples SV-01, SV-02, and SV-04 are proposed in areas above formerly identified contaminated soils. Samples SV-03, SV-05, and SV-06 are proposed in anticipated living spaces that are a part of the future residential plan of the Property.

Ceres Associates will subcontract with TEG of Sacramento, California to provide soil vapor sampling. TEG will conduct their sampling in strict accordance with DTSC guidelines for soil vapor sampling.

Soil gas samples will be collected using low-volume soil vapor sampling system (performed by TEG) which has been inspected and endorsed by regulatory agencies, including the U.S. EPA and Cal-EPA, specifically the DTSC. This system effectively eliminates air leakage down the soil vapor probe, ensures sample collection from the tip, and its design supports decontamination between samples. The soil gas probes are constructed of 1-inch outer diameter chrome-moly steel and are equipped with a steel drop-off tip. An inert 1/8 inch tube runs through the center of the probe and is attached to the sampling port with a stainless steel post run fitting.

The probe is driven into the ground by the STRATAPROBE™ and once the desired depth is reached, the probe will be retracted slightly, while opening the tip and exposing the vapor sampling port. This design prevents clogging and cross-contamination from soil. Once the probe rod is in place, the sample will be collected after the probe equilibrates for at least 20 minutes. The soil gas sample will then be withdrawn from the inert tubing using a calibrated syringe which couples into a sampling valve.

A purge volume test will be conducted by sampling the first soil vapor location three times after sequentially collecting and discarding one, three, and seven tubing volumes of soil gas. The purge volume (i.e., one, three, or seven tubing volumes) corresponding to the highest chemical concentration (which is determined by analyzing samples corresponding to all three purge volumes) will be used for all subsequent sampling.

After purging, the next 20 cubic centimeters (cc) to 50 cc of soil vapor will be withdrawn into the syringe, plugged, and immediately transferred to the mobile lab for analysis within the specified

holding time. During sampling, a leak check gas (1,1-difluoroethene) will be used to confirm that the sample train and probe rod are tight and leak free. To minimize the potential for cross-contamination between sampling locations, all external probe components will be cleaned of excess dirt and moisture prior to insertion. The internal inert tubing and sampling syringes will be flushed with large volumes of ambient air between samples or discarded as required. If water, dirt, or any material is observed in the tubing, the tubing will be discarded and replaced with fresh tubing.

The sampling will be done, as best as practical, on a non-rainy day. If ACHCSA desires, Ceres Associates will notify representatives of the agency of the site sampling date/time.

4.2 Laboratory Analysis

Soil vapor samples collected from each probe will be transferred directly to the state-certified, on-site mobile laboratory and analyzed immediately. There will be minimal lag time between sample collection and analysis, ensuring that the integrity of the sample is maintained. Samples will be analyzed on a gas chromatograph equipped with capillary columns and a combination of mass spectrometer (GC/MS). This combination of columns and detectors ensures compound separation, recognition, and detection at the required levels. These detectors enable on-site analysis for VOCs using U.S. EPA Method 8260B and petroleum compounds using U.S. EPA Method 8015C.

TEG will provide Ceres Associates with the results of the sampling and Ceres Associates will compare the results of the soil vapor sampling with RWQCB's Residential ESL values for soil vapor for each constituent detected, if any.

5.0 PROPOSED BACKFILL SOIL SAMPLING

The ACHCSA requested that Ceres Associates demonstrate that the backfill materials used by Ceres and ERRG, Inc. to backfill the former excavations meets residential standards (refer to ACHCSA letter dated October 4, 2007). To accomplish this, Ceres will collected soil samples from the backfill and chemically analyze the soil samples as described below.

5.1 Soil Sampling

Ceres Associates proposes to advance a total of four borings on the Property (refer to Figure 5 – Proposed Soil Vapor Sampling and Backfill Soil Sampling Map) in the area of backfilled materials, using a Geoprobe 6600 (or equivalent), direct-push sampling rig. Sampling will be done in accordance with the DTSC's guidance document *Information Advisory, Clean Imported Fill Material*, October 2001.

Prior to conducting the field work, Ceres Associates will mark the boring locations in white paint and will notify USA at least 72 hours prior to sampling. Further, Ceres Associates will obtain a boring permit from the Alameda County Public Works Agency. On the field day, Ceres Associates will hold a Health and Safety Meeting, and then proceed with sampling.

The borings will be advanced as follows:

Boring	Depth of Sample *feet below ground surface*
BF-01	2.0
BF-02	4.0
BF-03	6.0
BF-04	8.0

Sampling at multiple intervals will provide a diverse sampling pattern, which should be representative of the entire volume of backfilled soil. The borings will be backfilled per permitting requirements.

Soil samples will be collected in 1½-inch diameter polypropylene tubes. The sample tubes will be driven into undisturbed soil, the ends of the tubes will be sealed with plastic caps. The tubes will be labeled with unique identification information and stored in a chest cooled with ice, for delivery to McCampbell Analytical, a state-certified analytical laboratory. Ceres Associates will follow chain-of-custody protocol.

5.2 Laboratory Analysis

Ceres Associates, in following DTSC guidance, will request that the laboratory analyze the four samples collected for the following analytes because the soil was reportedly excavated from undeveloped land near to a rock quarry:

- VOCs using US EPA method 8260b
- SVOCs using US EPA method 8270c
- TPH using US EPA method 8015
- PCBs and Pesticides using US EPA method 8080/8081
- CAM 17 metals using US EPA method 6010b
- Asbestos using PLM methods
- pH

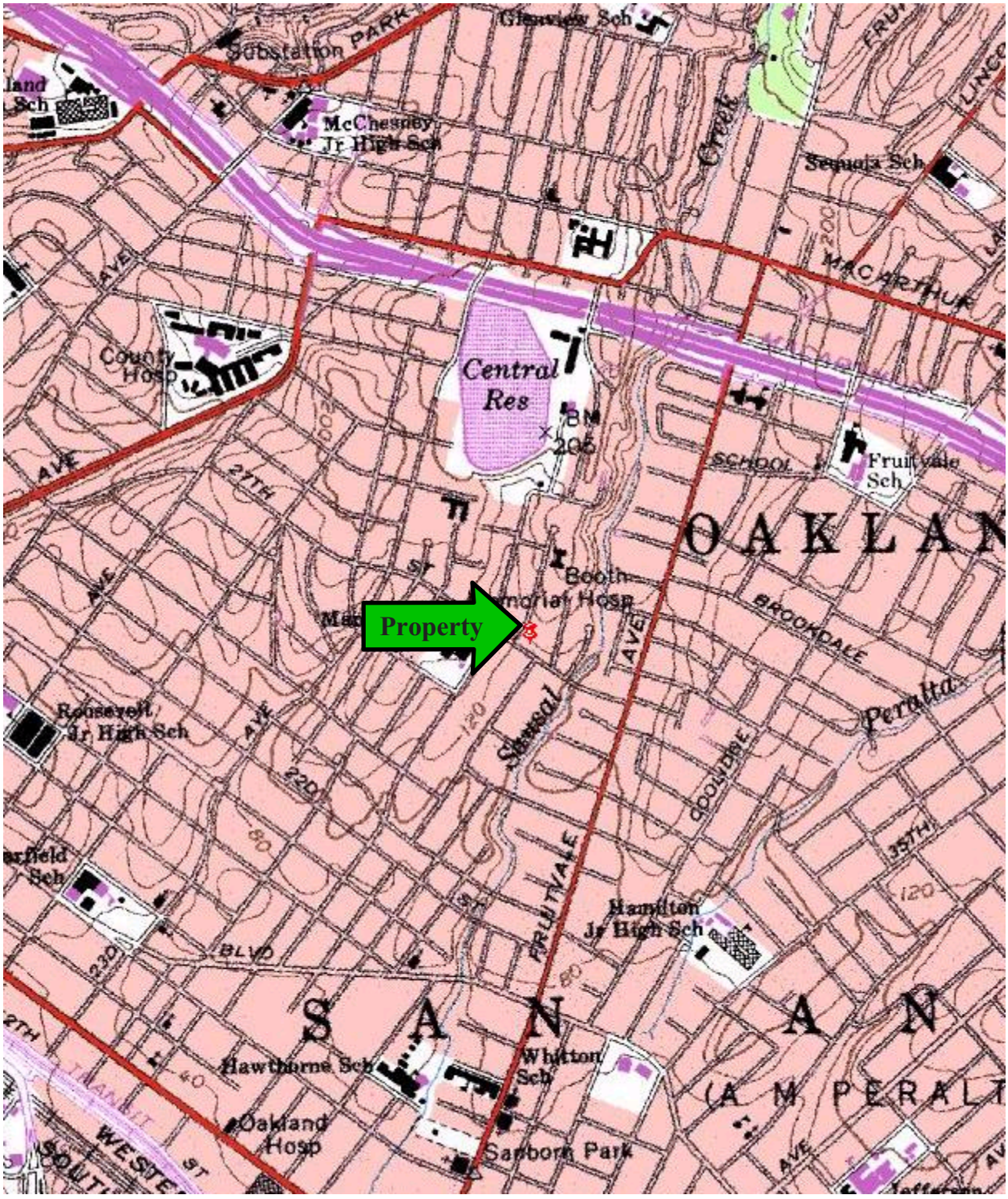
The results of the sampling will be compared with the RWQCB's Residential ESLs, except for Arsenic, which will be compared with documented regional background concentrations.

6.0 Reports

Ceres Associates will prepare a report detailing the activities and results of the implementation of this work plan. The report will also provide conclusions based on the data collected and recommendations as warranted. The report will be submitted to the ACHCSA as well as posted to the Geotracker web-site. Hard copies of the report will be provided to the Property owner, Tomorrow Development.

Appendix

Figures



1 inch equals 2000 feet

Map Taken From:

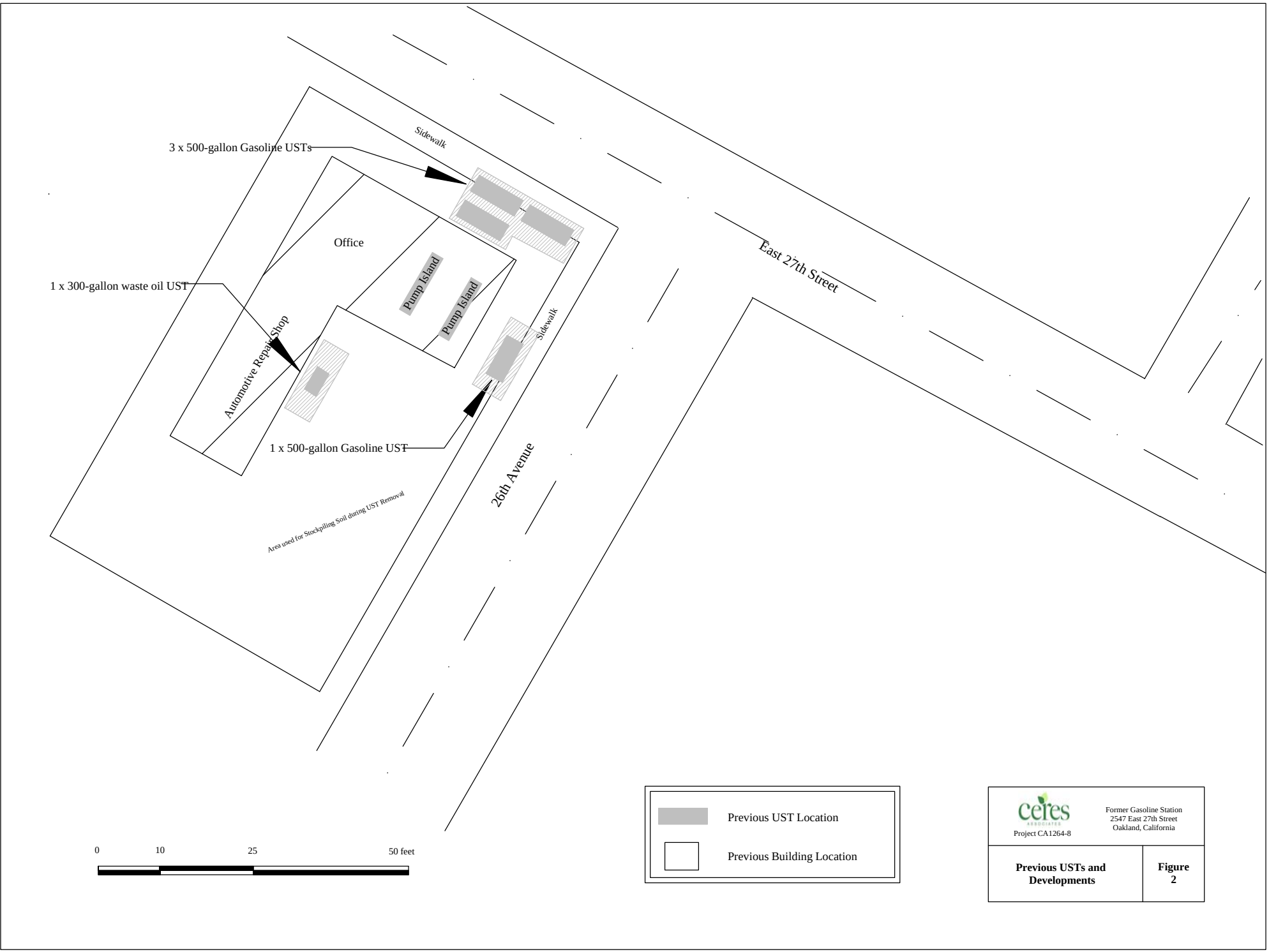
United States Geological Survey
7.5 Minute Topographic Series
Oakland East, California Quadrangle

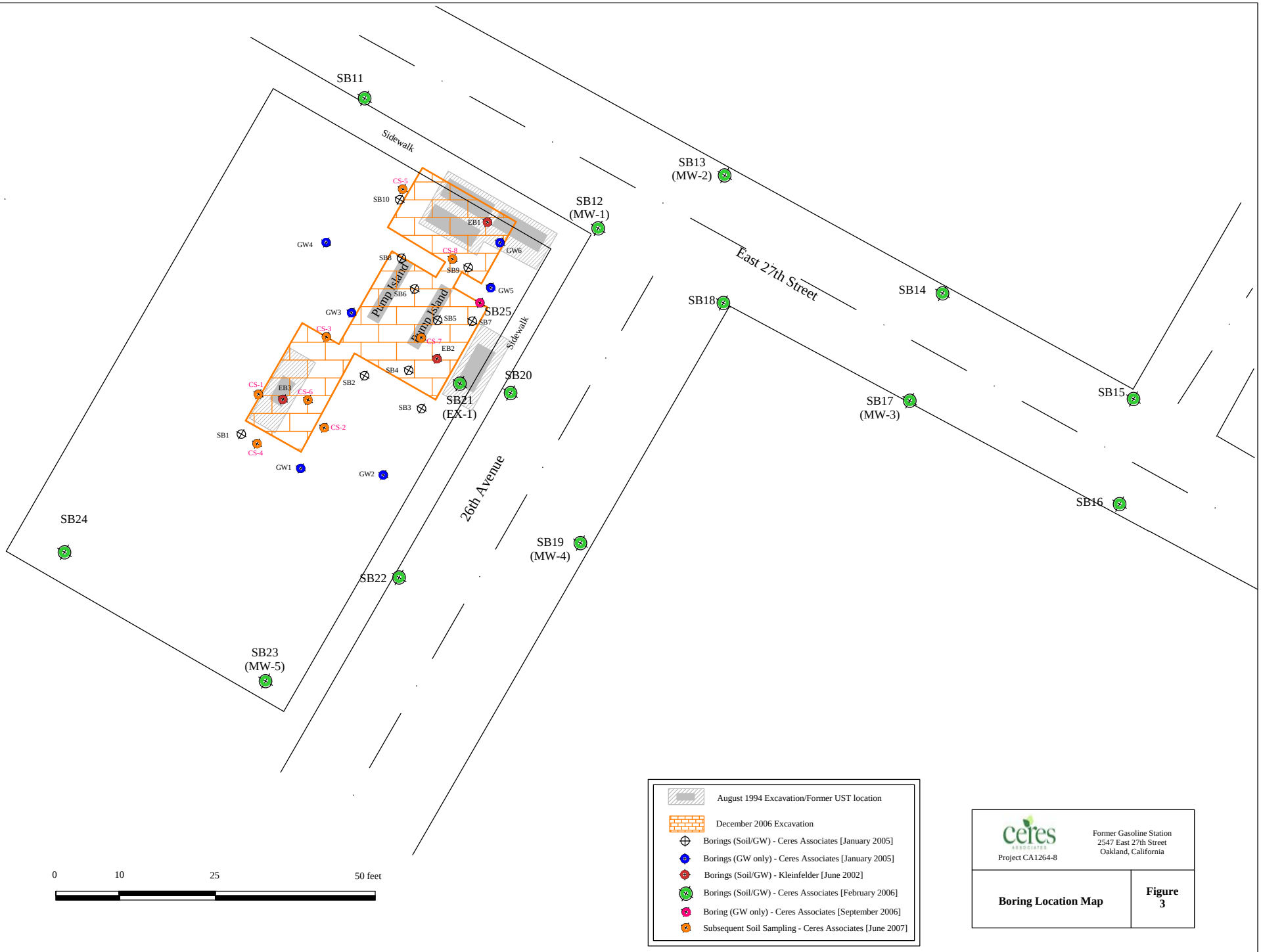
Project CA1264-8

Former Gasoline Station
2547 East 27th Street
Oakland, California

TOPOGRAPHIC MAP

FIGURE 1


3 x 500-gallon Gasoline USTs
Sidewalk
Office
Pump Island
Pump Island
1 x 300-gallon waste oil UST
Automotive Repair Shop
Sidewalk
East 27th Street
1 x 500-gallon Gasoline UST
26th Avenue
Area used for Stockpiling Soil during UST Removal
0
10
25
50 feet
Previous UST Location
Previous Building Location
ceres ASSOCIATES
Project CA1264-8
Former Gasoline Station
2547 East 27th Street
Oakland, California
Previous USTs and Developments
Figure 2



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Former Gasoline Station
2547 East 27th Street
Oakland, California

Boring Location Map

Figure 3

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Oakland, California

Monitoring Well Location Map

Figure 4

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Former Gasoline Station
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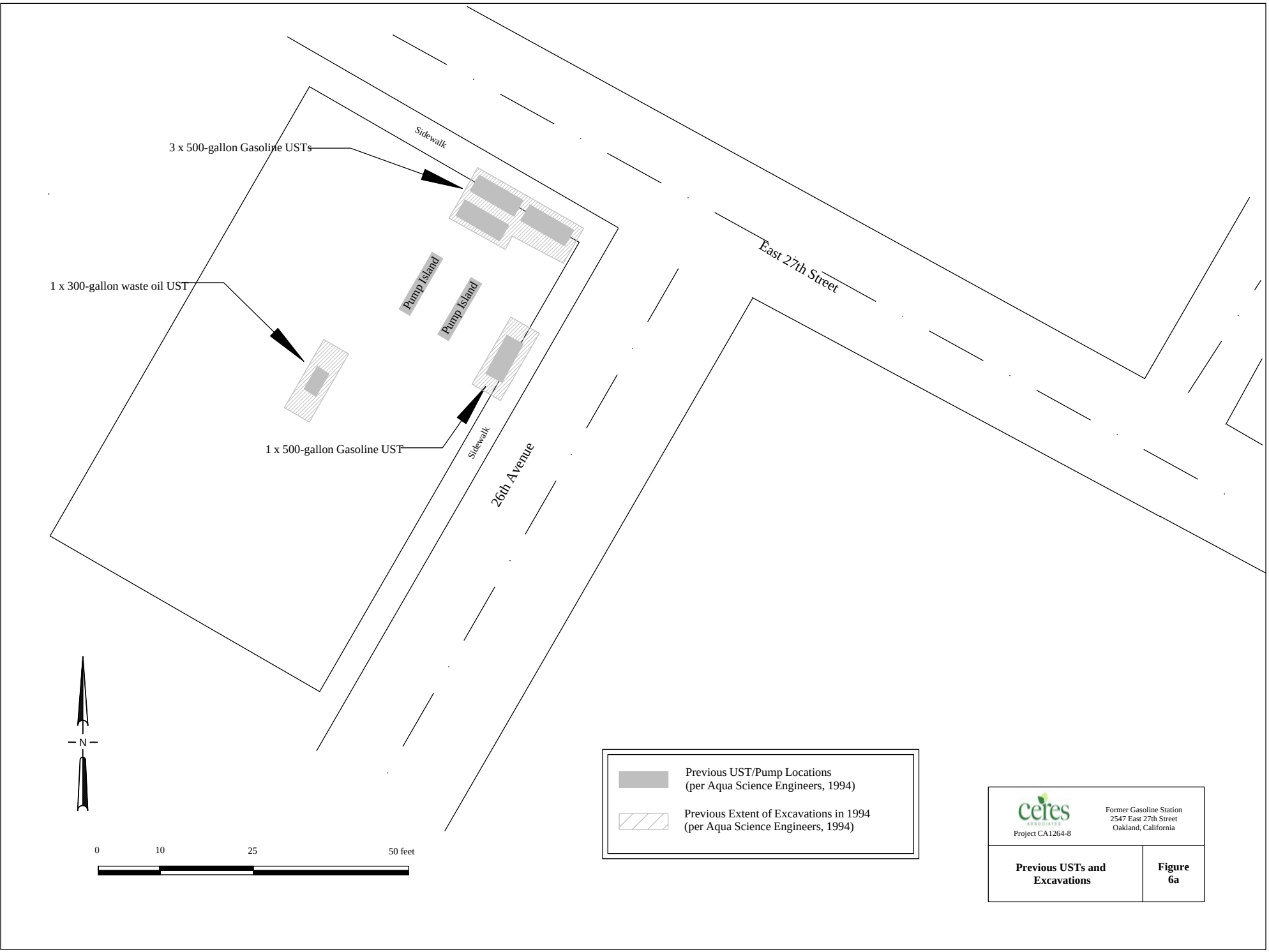
Oakland, California

Proposed Soil Vapor Sampling and Backfill Soil Sampling Map

Figure 5



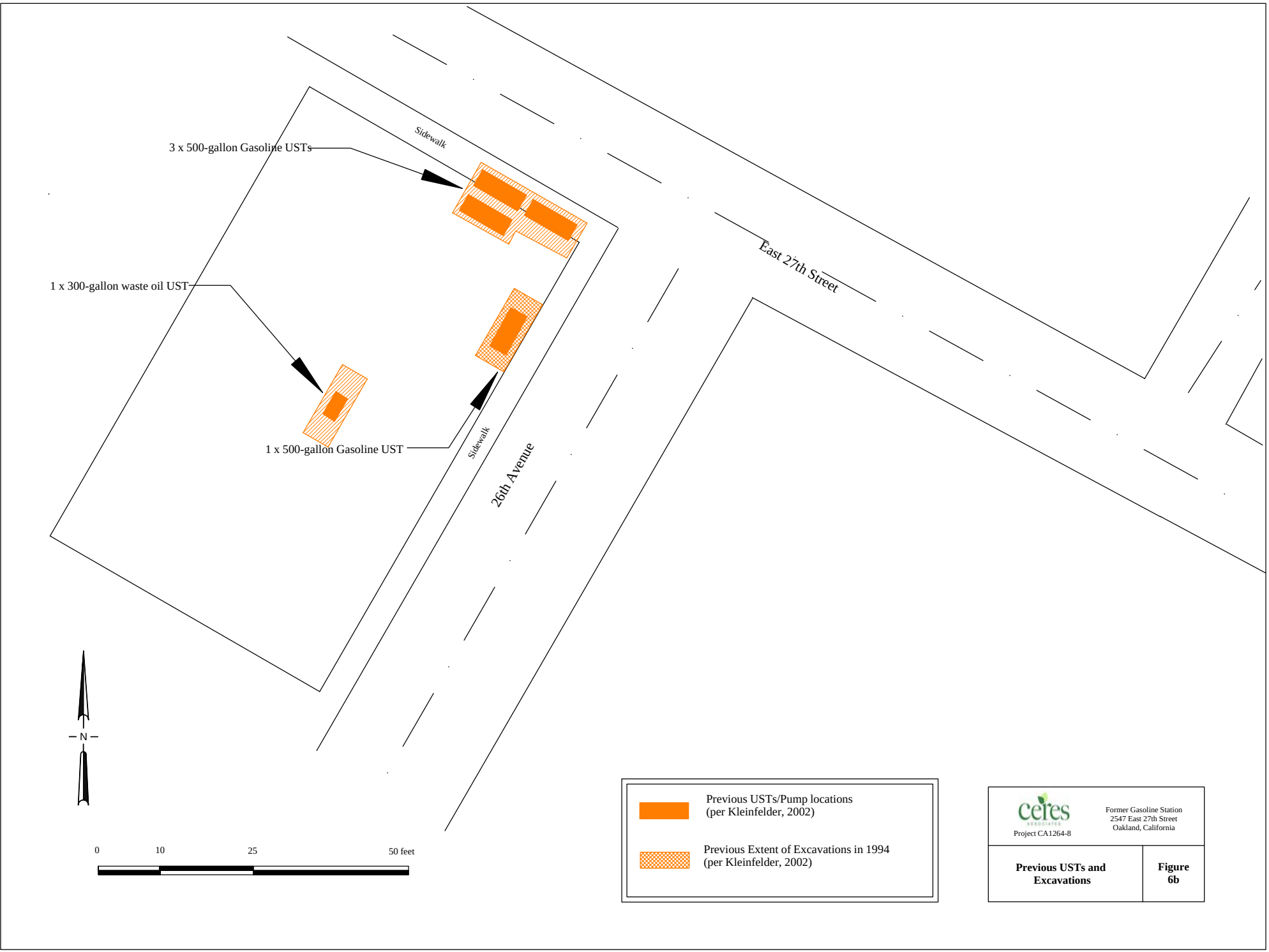
ceres ASSOCIATES

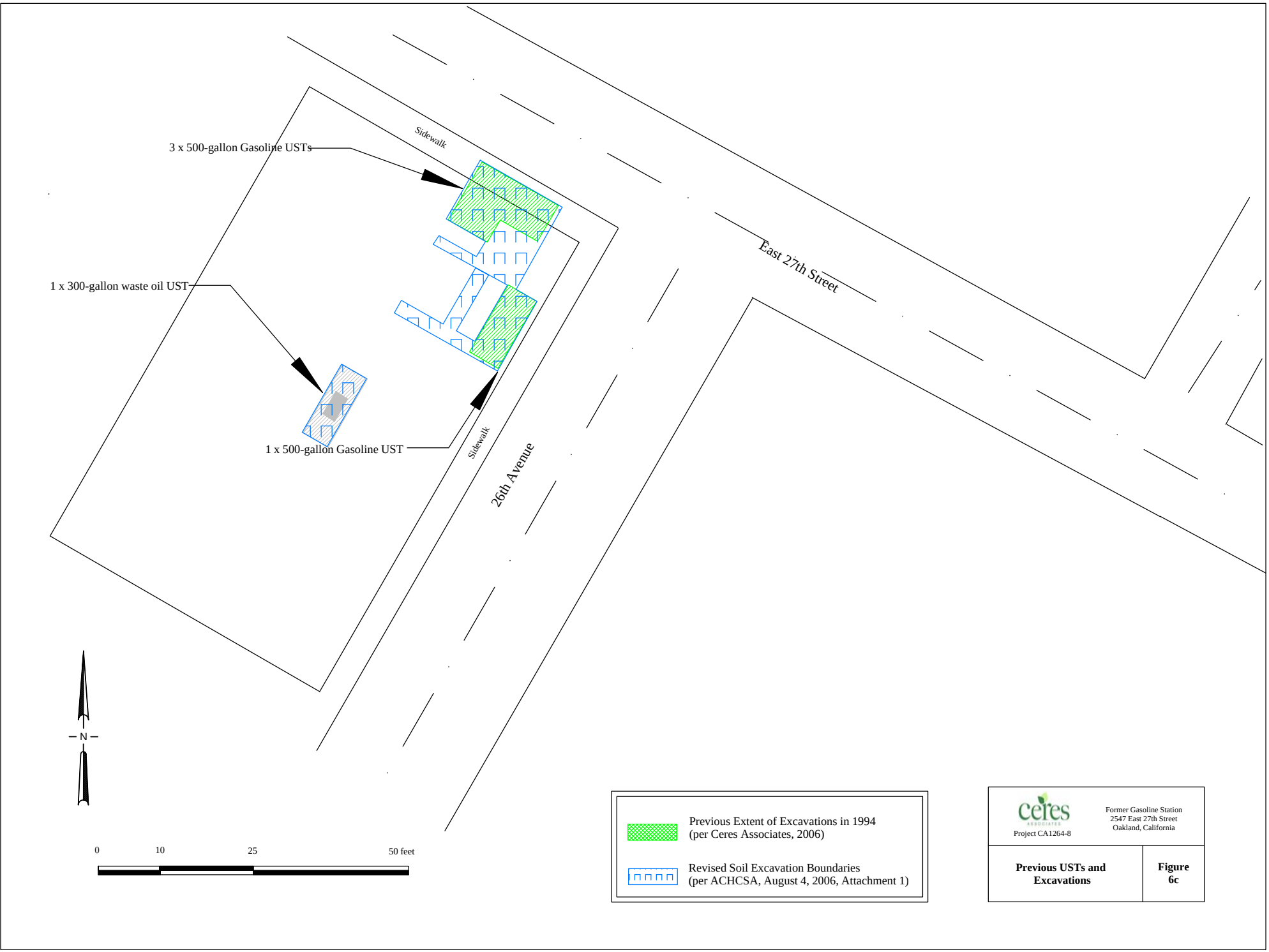
Project CA1264-8

Former Gasoline Station
2547 East 27th Street
Oakland, California

Previous USTs and Excavations

Figure 6a


3 x 500-gallon Gasoline USTs
1 x 300-gallon waste oil UST
1 x 500-gallon Gasoline UST
Sidewalk
Sidewalk
East 27th Street
26th Avenue
N
0
10
25
50 feet
Previous USTs/Pump locations
(per Kleinfelder, 2002)
Previous Extent of Excavations in 1994
(per Kleinfelder, 2002)
ceres ASSOCIATES
Project CA1264-8
Former Gasoline Station
2547 East 27th Street
Oakland, California
Previous USTs and Excavations
Figure 6b


3 x 500-gallon Gasoline USTs
1 x 300-gallon waste oil UST
1 x 500-gallon Gasoline UST
Sidewalk
Sidewalk
East 27th Street
26th Avenue
N
0
10
25
50 feet
Previous Extent of Excavations in 1994
(per Ceres Associates, 2006)
Revised Soil Excavation Boundaries
(per ACHCSA, August 4, 2006, Attachment 1)
Project CA1264-8
Former Gasoline Station
2547 East 27th Street
Oakland, California
Previous USTs and Excavations
Figure 6c

Other Documents

Table 8: Ceres Associates Initial Confirmation Soil Sampling - December 2006

Site: 2547 East 27th Street, Oakland, California
Sampling Dates: December 1 and 2, 2006

Sample	TPHg	TPHd	TPHmo/ho	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
	Concentrations reported in milligrams per kilogram, mg/Kg							
ESL (Table A-1): Residential Site, shallow soils, where Groundwater IS a current or potential source of drinking water	*100*	*100*	*500*	*0.023*	*0.044*	*2.9*	*3.3*	*2.3*
I-9-W	450	81						ND
I-9-E	1.7	ND						ND
I-9-N	600	420						1.1
I-9-S	7	1.2						0.016
II-9-W*	400	180						1
II-9-E	ND (all samples in this block)	ND (all samples in this block)	ND (all samples)	ND (all samples)	ND (all samples)	ND (all samples)	ND (all samples)	ND (all samples in this block)
II-9-N								
II-9-S								
III-9-W								
III-8-E								
III-9-N								
III-9-S								

Key

ESL	Environmental Screening Limit, published by San Francisco Bay Regional Water Quality Control Board (Feb. 2005)
ND	Not detected above the method reporting limit
	Shacklette, H.T., and Boerngen, J.G.: Element Concentrations in Soils and other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 127, 105 pages
TPHg	Total petroleum hydrocarbons as gasoline
TPHd	Total petroleum hydrocarbons as diesel
TPHmo	Total petroleum hydrocarbons as motor oil

Table 10: Ceres Associates Additional Soil Sampling - June 2007

Site: 2547 East 27th Street, Oakland, California
Sampling Dates: June 25, 2007

Sample	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	Chromium	Lead	Nickel	Zinc
	Concentrations reported in milligrams per kilogram, mg/Kg										
ESL (Table A-1): Residential Site, shallow soils, where Groundwater IS a current or potential source of drinking water	*100*	*100*	*500*	*0.044*	*2.9*	*3.3*	*2.3*	*58*	*150*	*150*	*600*
CS1-5	ND (all samples)	ND (all samples)	ND (all samples in this block)	ND (all samples)	ND (all samples)	ND (all samples)	ND (all samples)	52	ND	40	42
CS1-10								31	ND	22	18
CS2-5								33	ND	25	18
CS2-10								46	6.9	55	38
CS3-5								30	ND	19	16
CS3-10								49	9.6	72	53
CS4-5			5.9					40	6.8	26	21
CS4-10								38	5.6	33	22
CS5-5								28	ND	19	13
CS5-10								51	ND	35	30
CS6-10*			ND (all samples in this block)					36	ND	32	26
CS7-10								NA (all samples in this block)			
CS8-10											

Analytes that were reported as ND, but not listed here: PCBs, PNAs, PAHs, 1,4 Dioxane, Cadmium, and Total Oil and Grease

* Sample 6-10 was analyzed one day outside of the hold time for volatile organic compounds (BTEX was within time frame)

Key

ESL	Environmental Screening Limit, published by San Francisco Bay Regional Water Quality Control Board (Feb. 2005)
ND	Not detected above the method reporting limit
NA	Not analyzed
TPHg	Total petroleum hydrocarbons as gasoline
TPHd	Total petroleum hydrocarbons as diesel
TPHmo	Total petroleum hydrocarbons as motor oil

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

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

October 4, 2007

Mr. Ted Dang
Tomorrow Development Co., Inc.
1305 Franklin Street, #500
Oakland, CA 94612

Mr. John Thorpe
21790 Hesperian Blvd.
Hayward, CA 94541-7003

Subject: Fuel Leak Case No. RO0000396 and Geotracker Global ID T0600102124, Former Service Station, 2547 East 27th Street, Oakland, CA 94601

Dear Mr. Dang and Mr. Thorpe:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the reports entitled, "Revised Soil Excavation Report," dated August 31, 2007 (received by ACEH on September 4, 2007) and "Quarterly Groundwater Monitoring, Second Quarter 2007," dated July 7, 2007. The Revised Soil Excavation Report presents the results from soil excavation, confirmation soil sampling, and soil disposal activities conducted between November 2006 and January 22, 2007. The report was revised from a previous February 13, 2007 version in order to address technical deficiencies, collect missing data, and correct omissions in reporting.

Approximately 396 tons of contaminated soil was excavated and removed from the property. The excavations were reported to extend to depths of 9.5 feet bgs. Residual soil contamination with concentrations of total petroleum hydrocarbons (TPH) as gasoline that exceeded the target cleanup goal of 100 milligrams per kilogram were left in place along the north and west walls of excavation area 1. The Revised Soil Excavation Report indicated that the excavation could not be extended laterally in these areas due to site constraints.

Due to the residual contamination left in place, ineffectiveness of screening during excavation and resulting uncertainties regarding confirmation soil samples as discussed in technical comment 6, detection of benzene at an elevated concentration in soil during tank removal, and the locations of planned residences, we request that you conduct soil vapor sampling to confirm the apparent results of soil and groundwater sampling at the site. We request that you **submit a Work Plan for soil vapor sampling as requested in technical comment 9 by November 9, 2007.**

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

TECHNICAL COMMENTS

1. **Extent of Excavations on Figures 5 and 6.** Although we have previously commented on inconsistencies in the locations of the former August 1994 soil excavations on Ceres Associates maps, we note that the "Extent of Former Soil Excavation," shown on Figures 5 and 6 of the Revised Soil Excavation Report and Figure 2 of the Quarterly Groundwater Monitoring, Second Quarter 2007 (shows a green pattern on the figure with no label or note in the legend) are not consistent with the extent of excavation shown in the Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994. However, Figure 2 of the Revised Soil Excavation Report by Ceres Associates shows the previous UST locations in the same locations as Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994. The locations of the former USTs and former excavations must be shown accurately and consistently on site figures. In future reports, please show the extent of the recent excavation conducted between November 2006 and January 22, 2007, an accurate location of the previous USTs and dispensers, and an accurate extent of the 1994 soil excavation to be consistent with the Excavation Area shown in the Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994.

2. **Recommendations on Page 4.** The subsection that describes "Recommendations," from the Aqua Science Engineers 1994 report (3rd paragraph, page 4) requires some editing if this section is to be used in future reports.

3. **Soil Excavation and Confirmation Sampling.** The second paragraph on page 11 of the Ceres Associates, "Revised Soil Excavation Report," which discusses ACEH requests regarding the excavations, does not accurately represent comments and directives in ACEH correspondence. The item shown in quotes is taken out of context and is actually not from ACEH correspondence dated May 18, 2006 as indicated but instead is from ACEH correspondence dated August 4, 2006. In previous correspondence, ACEH has requested that contaminated backfill and residual soil contamination in the surrounding areas be removed as the first remedial action for the site; our requests have not been limited to removal of contaminated backfill.

4. **Depth of Excavation.** We note that the depth of excavation is reported as 9.5 feet bgs in each of the excavation areas on page 12 of the Revised Soil Excavation Report dated August 31, 2007. The depth of excavation was previously reported as 8.5 to 9 feet bgs in the Soil Excavation Report dated February 13, 2007. In the Soil Vapor Work Plan requested below, please confirm that the depth of excavation was 9.5 feet bgs.

5. **Imported Fill.** The Revised Soil Excavation Report indicates that the lower three feet of backfill consisted of quarry fines supplied by Curtner Quarry. The use of the quarry fines as base rock is acceptable and no further documentation is required. The upper portion of fill is described as, "clean fill soil from undeveloped land." Please provide further information regarding the upper backfill to ensure that the material is appropriate for residential land use. Guidance from the California Department of Toxic Substances Control (DTSC) is provided as Attachment A.

6. **Confirmation Soil Samples.** As shown on Table 7 of the Revised Soil Excavation Report, all confirmation soil samples were uniformly collected at a depth of 9 feet bgs. Soil screening during excavation does not appear to have been effective and was apparently not used to identify contaminated soil. Although the confirmation soil samples submitted for laboratory analyses contained up to 600 milligrams per kilogram of TPH as gasoline, the PID readings for all confirmation soil samples were zero. All PID readings appear to have been zero during excavation except two readings from the bottom of Excavation I. Due to the fact that screening was not effective and all confirmation soil samples were collected at a uniform depth, it is uncertain as to whether the confirmation soil samples were collected from optimal locations and depths to define the extent of contamination. The additional soil samples collected in borings CS-1 through CS-10 provide additional data outside the excavations at depths of 5 and 10 feet bgs. However, we note that screening of soil samples in these borings also did not appear to be effective and was not used to select soil samples for laboratory analyses. For borings CS-1, CS-4, and CS-5, the highest PID readings were from soil samples collected at 2.5 feet bgs. However, soil samples from depths of 5 and 10 feet bgs in these borings were submitted for laboratory analyses.

7. **Tables.** Tables 8 and 10 are missing numerous data points. As an example, only one sample on Table 10 has a value for TPHg even though all 13 samples were analyzed for TPHg. Please correct these tables in future documents.

8. **Soil Manifests.** The Non-Hazardous Waste Manifests in the Appendix labeled, "Other Documents" has a notation for "TPH and Metals Impacted Soils," in the Special Handling Instructions. The Revised Soil Excavation Report does not discuss elevated concentrations of metals in soils. In the Soil Vapor Sampling Work Plan requested below, please clarify the reason for the notation regarding metals impacts to soils on the soil manifests and present any metals data in addition to the composite stockpile sample data on page 13 that may indicate elevated concentrations of metals in the soil that was disposed off site.

9. **Soil Vapor Sampling.** Based on the residual contamination left in place, uncertainties regarding the confirmation soil samples as discussed in technical comment 6, detection of benzene at an elevated concentration in soil during tank removal, and the outline of residential development, we request that you conduct soil vapor sampling to confirm the apparent results of soil and groundwater sampling at the site. Soil vapor samples are to be collected from two locations within the footprints of each of the two planned residences. Please refer to the January 28, 2003 DTSC/RWQCB-LAR *Advisory – Active Soil Gas Investigations* and the December 15, 2004 DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* to help plan the soil vapor investigation. Please present your plans for soil vapor sampling in the Soil Vapor Sampling Work Plan requested below.

10. **Groundwater Monitoring.** We concur with the proposal to continue quarterly groundwater monitoring using each of the five existing monitoring wells. The groundwater samples are to be analyzed for TPH as gasoline, BTEX, and MTBE using EPA Method SW8021B/8015C and TPH as diesel using EPA Method 8015. Based on the results from groundwater sampling conducted in April 2007, continued analyses for chlorinated hydrocarbons, EDB and

EDC, and fuel oxygenates (TAME, ETBE, DIPE, and TBE) is not required. Please present results from quarterly groundwater sampling in the Quarterly Groundwater Monitoring Reports requested below.

11. **Groundwater Elevation Map.** Groundwater elevations must be posted for each well on Groundwater Elevation Maps. Showing only contours on Figure 3 of the Quarterly Groundwater Monitoring, Second Quarter 2007 without posting data is not acceptable. Figure 3 shows a closed depression surrounding well MW-4, which requires that groundwater is being extracted or leaking into utilities in this area. In the Quarterly Monitoring Report for Third Quarter 2007, please discuss your basis for concluding that there is a groundwater depression in the area of well MW-4.

TECHNICAL REPORT REQUEST

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

- **November 9, 2007** – Soil Vapor Sampling Work Plan
- **November 10, 2007** – Quarterly Monitoring Report for Third Quarter 2007
- February 10, 2008 – Quarterly Monitoring Report for Fourth Quarter 2007

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

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. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

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. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for 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 monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was

required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

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.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Attachment: Information Advisory, Clean Imported Fill Material, DTSC

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Ryan Meyer
Ceres Associates
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Donna Drogos, ACEH
Jerry Wickham, ACEH
File

Attachment A

Information Advisory
Clean Imported Fill Material

October 2001

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

It is DTSC's mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California

California Environmental Protection Agency

Executive Summary

This fact sheet has been prepared to ensure that inappropriate fill material is not introduced onto sensitive land use properties under the oversight of the DTSC or applicable regulatory authorities. Sensitive land use properties include those that contain facilities such as hospitals, homes, day care centers, and schools. This document only focuses on human health concerns and ecological issues are not addressed. It identifies those types of land use activities that may be appropriate when determining whether a site may be used as a fill material source area. It also provides guidelines for the appropriate types of analyses that should be performed relative to the former land use, and for the number of samples that should be collected and analyzed based on the estimated volume of fill material that will need to be used. The information provided in this fact sheet is not regulatory in nature, rather is to be used as a guide, and in most situations the final decision as to the acceptability of fill material for a sensitive land use property is made on a case-by-case basis by the appropriate regulatory agency.

Introduction

The use of imported fill material has recently come under scrutiny because of the instances where contaminated soil has been brought onto an otherwise clean site. However, there are currently no established standards in the statutes or regulations that address environmental requirements for imported fill material. Therefore, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this fact sheet to identify procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. Such sites include those that are undergoing site remediation, corrective action, and closure activities overseen by DTSC or the appropriate regulatory agency. These procedures may also apply to construction projects that will result in sensitive land uses. The intent of this fact sheet is to protect people who live on or otherwise use a sensitive land use property. By using this fact sheet as a guide, the reader will minimize the chance of introducing fill material that may result in potential risk to human health or the environment at some future time.

Overview

Both natural and manmade fill materials are used for a variety of purposes. Fill material properties are commonly controlled to meet the necessary site specific engineering specifications. Because most sites requiring fill material are located in or near urban areas, the fill materials are often obtained from construction projects that generate an excess of soil, and from demolition debris (asphalt, broken concrete, etc.). However, materials from those types of sites may or may not be appropriate, depending on the proposed use of the fill, and the quality of the assessment and/or mitigation measures, if necessary. Therefore, unless material from construction projects can be demonstrated to be free of contamination and/or appropriate for the proposed use, the use of that material as fill should be avoided.

Selecting Fill Material

In general, the fill source area should be located in nonindustrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former agricultural waste process byproducts such as manure or other decomposed organic material. Undesirable sources of fill material include industrial and/or commercial sites where hazardous ma-

Potential Contaminants Based on the Fill Source Area

Fill Source:	Target Compounds
Land near to an existing freeway	Lead (EPA methods 6010B or 7471A), PAHs (EPA method 8310)
Land near a mining area or rock quarry	Heavy Metals (EPA methods 6010B and 7471A), asbestos (polarized light microscopy), pH
Agricultural land	Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A), heavy metals (EPA methods 6010B and 7471A)
Residential/acceptable commercial land	VOCs (EPA method 8021 or 8260B, as appropriate and combined with collection by EPA Method 5035), semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015), PCBs (EPA method 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA Method ID-191)

**The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 7199*

Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Volume of Borrow Area Stockpile	**Samples per Volume**
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

terials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Undesirable commercial sites include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities. Undesirable industrial facilities include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Documentation and Analysis

In order to minimize the potential of introducing contaminated fill material onto a site, it is necessary to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that any such documentation should be signed by an appropriately licensed (CA-registered) individual. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual. If

metal analyses are performed, only those metals (CAM 17 / Title 22) to which risk levels have been assigned need to be evaluated. At present, the DTSC is working to establish California Screening Levels (CSL) to determine whether some compounds of concern pose a risk. Until such time as these CSL values are established, DTSC recommends that the DTSC PEA Guidance Manual or an equivalent process be referenced. This guidance may include the Regional Water Quality Control Board's (RWQCB) guidelines for reuse of non-hazardous petroleum hydrocarbon contaminated soil as applied to Total Petroleum Hydrocarbons (TPH) only. The RWQCB guidelines should not be used for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCS). In addition, a standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports.

When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. The table above can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I or PEA may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with DTSC or appropriate regulatory agency. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I or PEA, it is recommended that one (1) sample per truckload be collected and analyzed for all compounds of concern to ensure that the imported soil is uncontaminated and acceptable. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses). This sampling frequency may be modified upon consultation with the DTSC or appropriate regulatory agency if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, the DTSC recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. Compositing samples for volatile and semivolatile constituents is not acceptable. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, the DTSC recommends that a Phase I or PEA be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with the DTSC.

For further information, call Richard Coffman, Ph.D., R.G., at (818) 551-2175.